

Economic Development Survey of the State of Queensland

with

Particular Reference to the Prospects for Secondary Industry

Conducted by

The Economist Intelligence Unit Limited,
22 Ryder Street, London, S.W. 1

for the

Government of Queensland

at the direction of

Hon. K. J. Morris, M.L.A.,
Deputy Premier and Minister for
Labour and Industry

PARTS I and II
October, 1961

PART III
November, 1961

PART IV
December, 1961

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INTRODUCTION



The scope of this investigation is set out in the Terms of Reference of the 1966-1967 study by the Economist Intelligence Unit are:

1. To determine those industries which are the most suitable for investment in Queensland.
2. To determine those industries in those industries.

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INTRODUCTION



The objects of this investigation, as set out in the Terms of Reference of the 18th August, 1960, submitted by the Economist Intelligence Unit are:

1. To determine those industries which are the most suitable for establishment in Queensland.
2. To recommend methods of attracting investment in those industries.

Final instructions to proceed with the investigation were given in a letter of the 19th December, 1960, from Mr. W. Young, Director of Secondary Industries, Department of Labour and Industry, Government of Queensland.

The presentation of information and the layout of the report has been designed so that the widest possible use can be made of the various parts. Thus Part I. is designed to cover the present and likely future availability of the various factors of production, particularly in relation to the rest of Australia. Although some of the information included in this part (and Part II.) is very well presented in a number of State Government publications, all of the information included in Parts I. and II. is relevant to the subsequent analysis and has further been included because of its importance to potential investors should the report or parts of it be published.

In Part II., which is included in the same volume as Part I., the main economic determinants of demand for Australia as a whole and for Queensland are examined and an analysis is given of the present position of secondary industry in the State.

In Part III., an examination is made of the nature of the problem facing Queensland, of the relative importance of the various locational factors and of the benefits to be got from the possible expansion of secondary industry. This is followed by the selection of those industries and industrial sectors which would appear to have the best prospects of being expanded or established in the state. This selection is initially based upon the analysis given in earlier parts of the report and the application of certain criteria, and finally on a more detailed examination of the pattern of demand and supply for specific sectors of industry.

Part IV. comprises comparisons of the methods used by various bodies to attract industry to specific areas and recommendations by the Economist Intelligence Unit as to which are likely to be most effective in the case of Queensland.

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Throughout this report, unless otherwise stated, the "£" sign is used to indicate the values in "£" Australian, and the term Commonwealth is used to refer to the Commonwealth of Australia

QUEENSLAND: COMMUNICATIONS & AGRICULTURE



ECONOMIC DEVELOPMENT SURVEY OF THE STATE OF QUEENSLAND WITH PARTICULAR REFERENCE TO THE PROSPECTS FOR SECONDARY INDUSTRY

PART I.—FACTORS OF PRODUCTION

1. GENERAL GEOGRAPHIC BACKGROUND

Queensland covers an area of 667,000 square miles, between 10 and 29 degrees south latitude, and between 138 and 154 degrees east longitude. It comprises the north-eastern corner of Australia, of which its area amounts to 22.45 per cent., second only to Western Australia in size. The area of this vast State is more than seven times that of the United Kingdom, and a little more than the combined areas of Spain, France, West Germany, Italy, Switzerland, Belgium and the Netherlands. Its greatest extent from north to south is 1,300 miles, and from east to west 900 miles.

The majority of the State's area consists of the great western plains, which rise gently from only about 100 ft. above sea-level in the far west to the Great Divide. The distance of the Great Divide from east coast of Australia varies greatly, from 250 miles to under 30 miles, and in Queensland is generally further inland than in the other eastern States, averaging 130 miles from the coast, against 70 and 65 in New South Wales and Victoria. From the Great Divide the country falls, sometimes steeply, and sometimes gently, to the sea; but between the Great Divide and the sea there is a complicated jumble of coastal mountains, often higher than the Great Divide itself, plains, plateaux, and downlands, the fertile lowlands between the mountain ranges generally running in a NNW direction. None of the mountains exceeds 5,500 ft., and the absence of high mountains is of significance in the climate and water availability in Queensland—as it is in Australia as a whole, the highest Australian peak being only 7,300 ft.

The topography of Queensland may then be very roughly divided into (i) the eastern mountains and plains, (ii) the high downland sloping gently westwards from the Great Divide, and (iii) the flat arid western lowlands. The latter give way in the far north west of the State to rugged ranges, behind which are the open grasslands of the Barkly Tableland, principally situated in the Northern Territory.

Queensland is the most tropical of Australia's States (as opposed to territories) with 54 per cent. of its area north of the Tropic of Capricorn, compared with 37 per cent. of Western Australia's. All the other States are in the temperate zone. As huge portions of western Queensland are low-lying, summer temperatures are extremely high, and Cloncurry's highest recorded temperature of 127.5°F. has been exceeded by very few places in the world, and by nowhere in Australia, though some parts of tropical Western Australia are more continuously hot. Uncomfortably high summer temperatures extend over the whole of inland Queensland, and into New South Wales. The coastal areas, however, enjoy a more even climate; in Cairns, the mean temperature varies by not much more than 12 degrees throughout the year, and does not go much higher than 90°F. Brisbane has a definite cool season, but does not get as cool as the inland areas on its own latitude. In summer, therefore, the isotherms run in a north-south direction, cooling off towards the coast, and in winter they follow an east-west direction, getting cooler towards the south.

Rainfall also benefits the eastern coastal areas. Queensland has the wettest part of Australia—the narrow coastal strip between Cooktown and Ingham—and some of the driest, in the south-western desert, through which the 5 in. isohyet runs. From this south-western corner the isohyets radiate in more or less concentric semi-circles to reach 50 in. in the Brisbane area and 140 in. in the Innisfail-Tully area. Variations in rainfall are also extreme between seasons and between different years. Over the State as a whole, the four summer months of December, January, February, and March provide the majority of the year's rainfall, and this seasonal incidence is much more marked in the tropical portions of the State. The year-to-year variations become more marked with distance from the coast; the Channel country in the south-west, for instance, has a notoriously uncertain rainfall, and may get virtually no rain for several years running. The south-eastern portion, including Brisbane, has fairly regular winter rains, but even here, prolonged drought is not unusual.

Rainfall is one of the principal determinants of the Queensland pattern of agriculture—sugar cane, requiring high summer rainfall, is the State's principal crop, and is grown on the wet coastal strips of the eastern seaboard. Eastern Queensland—and in particular south-eastern Queensland—is also responsible for the great majority of the other crops produced in the State, and for its dairying grasslands. Queensland is

also fortunate in having nearly two-thirds of the world's largest known storage of underground water, the Great Artesian Basin, underlying the western plains. Whilst in general too bitter for crop production, the water from the artesian wells is acceptable to stock, and makes a useful supplement to the low and uncertain rainfall. The central downlands, extending in a broad strip from Hughenden in the north down to the New South Wales border in the south, carries most of Queensland's sheep, mainly merino. The northern plains, extending round the Gulf of Carpentaria, and the south-western lowlands, are given over in the main to the breeding of beef cattle on vast ranges, though beef cattle are fairly well distributed over the State, with some concentration in the more favoured south-east and central-eastern areas.

Geologically, the State may be divided into two principal sections, almost equal in area, and once again, the Great Divide is the point of departure for each section. The eastern portion consists of stratified rocks of different ages, ranging from the oldest Palaeozoic (between 520 million and 200 million years old). Mesozoic sediments (between 75 million and 200 million years old) overlie large areas of this section, reaching their greatest concentration—and the greatest concentration on the whole continent—in the Rockhampton area. There are also large areas of Cainozoic rocks (less than 75 million years old) as residual basalt cappings in eastern Queensland and in Cape York peninsula.

The second section comprises the rolling downland and plains of western Queensland. This section is made up of Lower Cretaceous rocks overlaid in places by desert sandstone. A porous bed of sandstone has been traced from Texas on the New South Wales border to Normanton on the Gulf of Carpentaria, and this is the chief intake rock for the water stored in the Great Artesian basin.

There is, however, a third section covering a comparatively small area, but which is of great significance to the State. This comprises the rugged country in the north-west of the State, and consists of Precambrian rocks of great antiquity—over 520 million years old. The Precambrian rocks of the Australian mainland contain perhaps less varied minerals than the younger Palaeozoic rocks of the east coastal districts, but the deposits are generally larger; the great Mount Isa copper-silver-lead-zinc mine is situated in this area, as are the uranium deposits of Mary Kathleen, and, in New South Wales, the enormous lead-silver-zinc re body of Broken Hill.

The eastern Palaeozoic rocks, and their Mesozoic sediments, are rich in minerals, but, except for coal, these are not often in large deposits. The most notable exception in Queensland is the Mount Morgan copper and gold body. The Cainozoic era formed the enormous bauxite deposits of Cape York peninsula, and deposited the alluvial tin that is dredged on the Atherton Tableland in North Queensland. The rich mineral sands of the south coast, derived from Palaeozoic granites, were deposited throughout the Mesozoic and Cainozoic eras.

Queensland has coal in great quantities, in both the Palaeozoic and Mesozoic formations. The State has nearly 8 per cent. of Australia's measured and indicated reserves of bituminous coal at 749 million tons (most of the rest is in New South Wales); but the possible reserves are far greater than this. Several basins in south-eastern and central-eastern Queensland, together with the Great Artesian Basin, are regarded as being potentially oil-bearing; oil and gas has been found in small quantities in the Roma-Tara districts, and the prospects of finding commercial-flow oil are now considered to be quite good.

Over half Queensland's great area is held under pastoral leases and a further 21.5 per cent. is under lease as grazing farms and homesteads. Under 1 per cent. of the land is under crops, and Queensland has the lowest area under crop of all Australian States with the exception of Tasmania. 85.6 per cent. of the State's area is Crown land held under lease. Only 6.5 per cent. of the land is alienated—mainly by purchase—as against 59.3 per cent. in Victoria, and 33.2 per cent. in New South Wales, but the alienated land comprises most of the valuable lands in the South-East and up the coast. The remaining 7.9 per cent. is unoccupied. These figures give a good idea of the extensive nature and sparse settlement of the majority of the State, which is well borne out by the pattern of population. The State supports only some 1½ million people, 14 per cent. of the population

of Australia, against 52 million in the United Kingdom, one-seventh of Queensland's size. The great centres of population are, of course, further south in Sydney and Melbourne, but Western Australia and South Australia have fewer people than Queensland.

Of the inhabitants of the State, some 70 per cent. live in the south-east corner, in an area roughly stretching from the New South Wales border in the south to Bundaberg, and westwards from the coast to Goondiwindi and Roma. Brisbane itself has 38 per cent. of the population. Outside the metropolitan area there are no towns exceeding 50,000 in population, though Townsville, the terminus of the Mount Isa railway, and the site of the Mount Isa company's copper refinery, looks like exceeding this figure soon.

Apart from the concentration in the Brisbane area, the bulk of the rest of the population is between the Great Divide and the sea. Mount Isa is the only settlement in the remainder of the State exceeding 7,000 in population.

The population of Australia is extremely highly concentrated in the capital cities: of Victoria's 2½ million people, 62 per cent. live in Melbourne, whilst in New South Wales, 54 per cent. live in Sydney. It is indicative both of Queensland's predominantly pastoral nature and of the greater degree of decentralisation in the State that the proportion of its population concentrated in the metropolitan area is the lowest of all the States with the exception of Tasmania.

Whilst the State divides naturally into four sections in a north-south direction—the coastal plains and mountains, the central downlands, the western plains, and the north-western rough country, the exigencies of transport in difficult terrain have accounted for its division into three sections running east and west—South, Central, and North Queensland. There are no inland waterways, and the mountainous nature of the coastal strip makes it difficult for the coastal railway to serve much of the interior. There are, however, good ports up the coast, and consequently the transport needs of the interior have been served by building three main railways into the deep interior, each stemming from a port or ports. Indeed, until 1903 Central Queensland was not connected with Southern Queensland by rail, and the coastal railway system was not completed until 1924. The trade of the three divisions was therefore largely distinct, based upon the three railway systems and sea transport. Thus Brisbane was originally only the commercial centre and chief port for Southern Queensland, containing the statistical divisions of Moreton, Maryborough, Downs, Roma, and South-Western. This division contains 74 per cent. of the population, and has the most varied resources of the State. Central Queensland consists of the statistical divisions of Rockhampton, Central Western, and Far Western; it has some of the State's richest agricultural and pastoral land, as well as the Mount Morgan mine, considerable coal reserves, still largely unexploited, and 9 per cent. of the State's population. North Queensland consists of the statistical divisions of Mackay, Townsville, Cairns, Peninsula, and North-Western; it has most of the State's sugar, the mines of the North-West, the Collinsville coal mines, some good agricultural and pastoral land, and the remaining 17 per cent. of the population.

The two largest towns of the central and northern divisions owe their origin not to their ports so much as to gold; indeed in both cases there are better natural harbours nearby. Rockhampton was established because of the Canoona gold rush in 1858, and Townsville by the discovery of gold at Ravenswood and Charters Towers. Rockhampton has a river port of limited use, but is developing Port Alma, at the mouth of the Fitzroy River, originally established in 1881, as an ocean terminal; nearby, the fine natural harbour of Gladstone also takes a fair share of Central Queensland's shipping, and has good bulk handling facilities as well as being an oil terminal of some importance. In the northern division, Townsville has a good man-made harbour, but one which needs constant dredging. Cairns and Mackay also have good artificial harbours, and Bowen, the rail terminus for the Collinsville coal mine, an excellent natural harbour. After Brisbane, the ports that handle most cargo are in North Queensland: Townsville comes first, followed by Cairns and Mackay, with the Central Queensland port of Gladstone coming next.

Existing railways are marked on the adjoining map. It will be noted that in addition to the three main railway sections of South, Central, and North Queensland, and the coastal line, South Queensland is well served by a considerable rail network, and Cairns is the rail terminus for an important subsidiary network covering the Atherton and Mareeba Tablelands, and going inland as far as Forsyth. The main through roads are also marked. Some of these follow the railway lines. Others, which have come into importance after the railways, tend to run into Brisbane from the interior rather than to the ports and centres up the coast. This has particularly detrimental effects on Central Queensland. There is also an important highway running into New South Wales from inland Queensland, and into the Northern Territory from Mount Isa and Cloncurry. Due to government legislation, however, road transport until 1960 was not permitted to assume any great importance as a competitor to the railways, and this, combined with the fact

that in the interior few of the roads are "all-weather", means that this has not as yet had any marked effect on the pattern of trade of the State. With the new Transport Act, however, which gives much greater freedom to road transport, this may be expected to change.

Australia is plagued by the difference in rail gauges between States. Queensland's are 3 ft. 6 in., as are those of Western Australia, Tasmania, and the Northern Territory; New South Wales railways are 4 ft. 8½ in., whilst those of Victoria are 5 ft. 3 in. South Australia has divided its favours among the three gauges, depending upon which of the neighbouring States it is connecting up with. Each State usually has some portion of its neighbour's gauge, and Brisbane is connected to New South Wales with a short stretch of 4 ft. 8½ in. track. Queensland has more route miles of railway open for traffic than any other State.

Brisbane is 613 miles by rail from Sydney and 1,203 from Melbourne. It is better placed for the Sydney market than Adelaide, though not for the Melbourne market. It is, of course, very much closer to both cities than Perth. As regards the main overseas markets, it is rather closer to New Zealand than Melbourne, though Sydney is closer still; but there is not a great deal in it. Fremantle in Western Australia is closest to the European markets, and Brisbane suffers from the fact that the main shipping routes to Europe go round the south coast of Australia. The same disadvantage applies to the African markets. As regards the Americas, Brisbane is at least at no great disadvantage from Sydney and Melbourne. For the Asian and East Indian markets, Western Australia enjoys a considerable advantage over the eastern centres for most destinations. Brisbane, however, once again, is at least as well placed as Sydney and Melbourne in most cases. It is closer to Hong Kong and Singapore than both of them, and closer to Manila and Yokohama than any of the other main Australian ports. In the latter case, the advantage in distance is considerable—it is 336 miles closer than Sydney, 895 miles closer than Melbourne, and 470 miles closer than Fremantle. The ports up the Queensland coast, of course, enjoy a progressively greater advantage in terms of distance to Japan, and the North Queensland ports are, after Darwin, the best placed geographically to serve the Japanese market.

2. RAW MATERIALS

(a) Minerals*

Copper.—Australia is now the world's sixth largest producer of copper, having replaced Japan in that position in 1959. Australian production is nevertheless small compared with that of the United States, Chile, Northern Rhodesia, Canada, and the Congo. These countries between them account for 77 per cent. of the ore production of the world whilst Australia accounts for 3 per cent. Of this, Queensland produces about 70 per cent., mostly from Mount Isa, whose production has been rising fast in recent years as a result of a £30 million development initiated in 1954-55. The mine produced 71,314 tons of blister copper in the year ending June 30, 1961, more than Australia's total requirements, which are estimated at 52,000 tons, rising at the rate of 4 per cent. a year. Hand in hand with this development, the railway to Townsville is currently being expanded to take the additional production, and the company has built a 40,000-ton capacity electrolytic copper refinery at Stuart, 7 miles from Townsville. The capacity of this mill is being increased to 60,000 tons a year. Plans have been prepared to raise output to 100,000 tons eventually, and the buildings have been so laid out that the factory could be completely duplicated should developments at Mount Isa itself warrant it in the future. Ore production at the mine during the year ended June 30, 1960 was 1.9 million tons, and at that time, proved reserves amounted to 24.2 million tons. But actual reserves are known to be very much greater than this, and are believed to be capable of sustaining a high rate of production for at least 50 years. The Stuart refinery produces wire bars (and incorporates a wire drawing mill), rectangular cakes, and circular billets for supply to manufacturers of sheets, tubes, and extruded products.

Enough has been said to show that ample supplies of refined copper are available in Queensland. The developments at Mount Isa and elsewhere will in fact leave a large surplus of Australian blister for sale on the generally less remunerative world market, whilst the development of the Townsville refinery and its expansion possibilities could eventually make available up to 200,000 tons of refined copper to existing and new industries. The fact that refined copper is sold to the United States of America, Japan, and Europe, bears testimony to the fact that Mount Isa copper is competitive in cost and quality—though the company has been concerned about rising costs and has had to by-pass lower grade ores which might otherwise have been economically recovered.

Mount Morgan is the other—and long-established—main copper producer in the State. Last year, this mine produced 8,189 tons of blister containing 8,112 tons of copper. The

* In this section, the term "the world's production" generally excludes that of the Soviet bloc.

blister is refined at Port Kembla in New South Wales. Proved reserves at Mount Morgan are 12 million tons of ore containing 1.09 per cent. copper. 4.6 million tons of ore were mined last year.

Lead.—Australia has been since 1957 the world's largest producer of lead ore, accounting for 17 per cent. of the world's supplies. The bulk of this—75 per cent.—is mined in New South Wales at Broken Hill and Captain's Flat, but Queensland has most of the rest, all of it at Mount Isa. The mine's capacity is 70,000 tons a year, but production has been restricted in recent years, due to a world surplus; the production for the 1960-61 financial year totalled 53,300 tons, a slight increase on the previous year. Most of the Broken Hill production is refined at Port Pirie in South Australia. Mount Isa silver-lead ore is smelted at Mount Isa itself and then shipped to London where the bullion is refined and the silver and lead content sold on the London market. The London refining company is a subsidiary of Mount Isa Mines Ltd. Lead-silver-zinc ore treated by the company during the year ended June 30, 1960, amounted to 772,930 tons, and the proved reserves are 25.6 million tons of ore containing 7.8 per cent. of lead.

Zinc.—Australia is the fourth largest zinc producer, after the United States, Canada, and Mexico, and accounts for some 9 per cent. of the world's supplies. Lead and zinc generally occur in the same ores—certainly in all Australian deposits—and so the pattern of production of zinc within Australia is parallel with that of lead. Most of Australian production therefore comes from New South Wales, but in the case of zinc, Tasmania is the nation's second producer. Zinc produced in Queensland—all from Mount Isa—accounts for just under 7 per cent. of Australian production. During the year ended June 30, 1961, the mine produced 59,339 tons of zinc concentrates. Whilst half the zinc concentrate produced at Broken Hill is refined in Tasmania together with all that State's production—say, 140,000 tons of zinc altogether—the remainder, including Queensland's entire production, is shipped overseas in concentrate form for refining. Zinc refining is highly power-intensive, and a zinc refinery in Queensland would depend upon availabilities of cheap power. Mount Isa's proved reserves of lead-silver-zinc ores (25.6 million tons) contain 5.8 per cent. zinc.

Silver.—A large part of the world's silver is used for coinage and artistic purposes, but it has certain limited industrial uses. It is virtually indispensable for photographic films, plates, and printing paper, and is used medicinally, and as a conductor of electricity in many electrical instruments.

Australia is the world's fifth largest producer of silver, accounting for 7½ per cent. of the world's production. Over half of this comes from Broken Hill, but Queensland is the second largest producer, with 35 per cent. of Australia's output. Most of this comes from the silver-lead-zinc ores of Mount Isa, but some is recovered from copper concentrates produced at Mount Morgan, and some is contained in bullion derived from the Cracow gold ores. Silver recovered from the lead bullion shipped to London by the Mount Isa Company for the year ended June 30, 1960, amounted to 4.3 million ounces, whilst the blister produced at Mount Morgan contained 21,195 ounces. Mount Isa's reserves of silver-lead-zinc ore (25.6 million tons) contains an average of 5.6 ounces of silver per ton.

Bauxite.—At present Australia accounts for only a very small percentage of world bauxite production—some 7,000 tons, of which approximately 1,200 tons come from Queensland, Victoria being the principal producing State. At present, none of the bauxite produced in Australia is used for aluminium production, the Bell Bay, Tasmania, aluminium plant operating on imported bauxite, largely from Indonesia. With aluminium production, the problem is not so much shortage of the metal or ores—aluminium is the third most plentiful element in the earth's crust, after oxygen and silicon—but that refining a ton of it takes 25,000 kilowatt-hours of energy, or the equivalent of about twenty times more coal than is consumed for a ton of pig iron. The existence of bauxite deposits has been long known in Australia, some in south-eastern Queensland. However, neither quality nor quantity was suitable for large-scale exploitation on an economic basis, and mining was only carried out on a very small scale, mainly for various industrial uses—in 1958 only 1,191 tons were mined in Queensland, at Tamborine Mountain, near Brisbane. In 1955 total Australian proved reserves amounted to 21 million tons, 473,000 of them in Queensland.

The situation has been revolutionised by the Cape York and other discoveries in 1955. The Weipa formation in Cape York is estimated to contain about 3,000 million tons, of which at least 2,000 million tons will be metal grade averaging 55 per cent. alumina (aluminium oxide— Al_2O_3), 3.5 per cent. reactive silica, and 1.5 per cent. quartz. The bauxitic layer, which covers at least 200 square miles, may be said to be the largest in the world, estimated to contain 30 per cent. of total world reserves. Large-scale development is not only feasible but essential if high establishment costs are to be met.

Several aluminium smelting projects have already been announced in Australia and New Zealand. Comalco is to ship alumina from Weipa to New Zealand for smelting by means of hydro-electric power, the cost of which will eventually be similar to the great Kitimat scheme in Canada—0.2 pence per unit. This smelter will have a capacity of 120,000 tons of aluminium a year. Alcoa plans to build a smelter in Victoria, utilising alumina produced from bauxite deposits in the Darling Ranges of Western Australia, with a capacity of 40,000 tons a year and based on lignite. Comalco will also increase the capacity of its Bell Bay, Tasmania, smelter, at present the only one in Australia, to 28,000 tons a year by 1964, and to 44,000 tons later on. These developments will give Australia and New Zealand a capacity of 188,000 tons a year in 1966, by which date Australian consumption is expected to reach some 70,000 tons a year. The new Australasian industry will therefore have to be orientated primarily towards the world markets; costs will be an important factor, particularly in the conditions of intense competition that will characterise the world aluminium market for many years to come. As power costs are the most important element in aluminium production, almost all the world's smelters are based upon hydro-electric power, although recent German, United States and Australian developments indicate that coal-based power is not ruled out as far as aluminium production is concerned. It is still possible that sooner or later a smelter will be built in Central Queensland based upon the plentiful supplies of cheap, open-cut steam coal available at Blair Athol and Callide and the prospects for this are discussed in Part III, but at least until the 1970's, Queensland will probably have to bring in primary aluminium from Victoria, Tasmania, or New Zealand if it needs it as an industrial raw material.

Iron Ore.—There are iron ore deposits throughout Australia, but the only ones that are worked at present for the production of iron and steel are in South Australia and in Western Australia. Total recovery of iron ore is running at some 4 million tons per year, of which the Middleback Ranges in South Australia, providing ore for the Broken Hill Pty. iron and steel complex at Newcastle, New South Wales, provides some 3½ million tons. In the future an increasing proportion of supplies will come from Yampi Sound in the north of Western Australia. A small amount of iron ore is mined in North Queensland for local use.

Queensland has, however, numerous iron ore deposits, including a vast deposit in the extreme west of the State at Constance Range, and numerous small ones up the coast. A recent report indicates that a new discovery near Gladstone may be of some importance. The prospects of these deposits being exploited to feed an iron and steel industry in Queensland are discussed in Part III.

Tin.—Australia accounts for about 1.6 per cent. of the world's supplies of tin. Of this, Queensland produces about 46 per cent. or some 1,500 tons of concentrates per annum; the other important tin-producing State is Tasmania, while some is mined in New South Wales and Western Australia, and very small quantities in Northern Territory. Most of Queensland's tin is dredged from alluvial deposits on the Atherton Tableland, and shipped in concentrate form to Sydney for refining. Mount Isa Mines Limited has been drilling alluvial tin in the Kangaroo Hills field for the past two years, and BHP, among other companies, is examining and prospecting tin loads on the Herberton field. Australia is a net importer of tin, obtaining a third of its needs from overseas.

Gold.—Gold is not, except only very marginally, an industrial raw material, but it is included here as having considerable economic importance. Australia's production of gold amounts to just over 3 per cent. of that produced in the free world, of which no less than 62 per cent. is produced in South Africa. It is, however, the fourth largest producer, after South Africa, Canada, and the United States. Western Australia produces most of Australia's gold, followed by Northern Territory, and then Queensland, with 6 per cent. of the Commonwealth's total. More than two-thirds of Queensland's gold is recovered from the blister copper produced at Mount Morgan, most of the remainder coming from Cracow. The State's production runs in the region of 80-90,000 fine ounces per annum, and the Mount Morgan company's production, which has been rising quite fast in recent years, amounted to 69,017 fine ounces in 1959-60. Mount Morgan's 12 million tons of proved reserves contains 2.41 dwt. of gold per ton.

Uranium.—Uranium, though of limited importance as a raw material, is also included here as being one of the resources of Queensland. Uranium oxide is produced under government contract at Mary Kathleen, some 30 miles east of Mount Isa. World overproduction, combined with the slowing down of atomic power projects throughout the world have combined to put uranium mining into a difficult position; when the present contracts expire about 1965 it will not be until at least the 1970's that demand will begin to pick up again. There is a danger, therefore, that Mary Kathleen will become a ghost town, but the company exploiting the deposits

is making great efforts to find alternative metals to mine in the vicinity of the settlement. Six hundred and fifty tons of uranium oxide were produced at Mary Kathleen in 1959.

Mineral Sands.—Australia is the world's largest producer of zircon, and a major supplier of rutile. These, plus small quantities of ilmenite, monazite, and magnetite, are derived mainly from the mineral sands along about 90 miles of the New South Wales-Queensland coast, from Byron Bay, New South Wales, to North Stradbroke Island off Brisbane, though the sands occur over some 300-400 miles of the coast, as far up as Rockhampton in Queensland. The ilmenite found in Queensland is mostly unsuitable for titanium oxide pigment manufacture, and most of Australia's production of this mineral comes from Western Australia. Further reference will be made to this in Part III.

Zircon is the principal mineral for the extraction of the metal zirconium, which in the form of its oxide zirconia, has remarkable refractory properties, and is used in the production of crucibles, furnaces, firebricks, and other materials which are subjected to very high temperatures. Zirconium refractories have a very low coefficient of expansion, freedom from corrosion and cracking, and a high mechanical strength. Zirconium also makes a number of useful alloys, particularly with magnesium, and is important in nuclear energy. Queensland production of zircon reached a peak in 1957, when 28,956 tons of the concentrate was produced, 45 per cent. of Australian production, most of the rest being produced in New South Wales. Since then, however, world prices have caused a considerable falling-off in production, and in 1959 output amounted to only 15,121 tons. Virtually all zircon concentrates are exported, mainly to the United States and the United Kingdom.

Rutile is one of the two principal minerals from which the metal titanium is extracted, the other principal one being ilmenite. Titanium is mainly used in oxide form for the manufacture of paints. Small quantities are also used in aluminium alloys, and alloys used in gas turbine engines. Queensland produces about 44 per cent. of Australia's rutile, most of the rest coming from New South Wales. As with zircon, a production peak was reached in 1957, when 41,500 tons of titanium contained in rutile concentrate was produced. World demand has caused a cut-back since then, and in 1959 only 19,729 tons were produced. Nearly all rutile concentrates are exported overseas.

Monazite is the chief source of the metal cerium, used in "flints" for cigarette lighters, and in alloy with magnesium. The world's largest source of monazite is in India, and the Queensland sands treated in 1959 yielded only 85 tons of this rare mineral.

Other Metallic and Semi-Metallic Minerals.—It may be truly said that the vast surface of Australia has been barely scratched for minerals, and some of the rarer metals and semi-metals are known to exist in Queensland; indeed small quantities of them have been mined. These are—antimony (23 tons of ore produced in 1955); wolfram and scheelite, the two ores of tungsten (1957 production 32 tons); manganese ore (1959 production 9,666 tons); molybdenite (1958 production 4½ tons); magnesite, the principal ore of magnesium (1958 production 28 tons); dolomite, another source of magnesium which has some useful properties of its own (1959 production 2,000 tons); and beryllium ore (1958 production 12 tons). Other metallic and semi-metallic minerals which have been mined in Queensland are—bismuth, arsenic, chromite (the ore of chromium), cobalt, mercury, tantalite, and cadmium.

Pyrite.—Queensland's production of pyrite—from Mount Morgan—amounts to only a very small proportion of that produced in Australia. Sales have been for some years much lower than production, and the Mount Morgan company has a large stock of pyrite, produced incidentally to the mine's copper and gold production, amounting to 115,477 tons, of which 76,477 tons are company stock. Production in 1959-60 amounted to 18,305 tons, and the pyrite now being mined has the high sulphur content of 51.5 per cent.; it also contains traces of copper, and 1.01 dwt/ton of gold.

Non-Metallic Minerals.—Non-metallic minerals are widely distributed over the State, while production is limited by demand. The following table gives the production of the principal non-metallic minerals in tons. Coal is dealt with under "Fuel and Power".

PRODUCTION OF NON-METALLIC MINERALS (Tons)

	1958	1959
Limestone and lime	227,845	168,512
Fireclay	7,161	8,443
Fluorspar	918	460
Marble	323	164
Mica	10	Nil
Silica	4,280	1,594
Diatomite	29	Nil
Bentonitic clay	86	96
Kaolin, pottery clay and other similar clays	259	136
Brick and pipe clay	223,738	289,931
Perlite	300	708
Salt	1,253	11,054
Building stone	25,198	62,787

The decline in fluorspar production has been caused by competition from imported material, chiefly from Mainland China and South Africa. However, a recent geological survey indicates that reserves, within 30 miles of existing railways, amount to over 30,000 tons, plus considerable quantities both in more remote areas and undeveloped deposits.

The rise in salt production is accounted for by the entry into production of the Central Queensland Salt Industries Limited saltworks near Rockhampton, which has recently been producing salt from natural underground brines at the rate of 20,000 to 24,000 tons a year, about 60 per cent. of the State's consumption. The capacity of the plant may soon be raised to 60,000 tons a year for entry into the export trade, particularly to Japan and New Zealand.

(b) Crops and fruit

Being primarily a pastoral and mining State, the area under crops is the lowest of all the States except Tasmania—Queensland's 2.8 million acres compares with New South Wales's 6.8 million acres, and Victoria's 4.8 million acres. However, an extraordinary variety of crops is grown. Queensland is also Australia's main source of tropical foodstuffs and crops for industrial use. Marketing, and in some cases production, of most of the crops and fruit produced in Queensland is controlled by Marketing Boards, often as part of Commonwealth-wide stabilisation schemes. The commodities thus controlled are—sugar, maize (Atherton Tableland only), barley, broom millet, cotton (the board also operates ginneries and a vegetable oil mill) fruit and vegetables (also operating canneries), ginger, grain sorghum, navy beans, onions, peanuts, tobacco leaf, and wheat.

Sugar.—Queensland has 97 per cent. of Australia's acreage under sugar, the remainder being in northern New South Wales. It now produces some 10 million tons of sugar cane for crushing a year, giving about 1.3 million tons of raw sugar, or about 2½ per cent. of world supplies of all sugar, whether cane or beet. Australia is the world's fourth largest producer of cane sugar. Domestic consumption last year amounted to 551,000 tons, and 788,000 tons were exported, mainly to the United Kingdom (346,000 tons), Canada (177,000 tons), and Japan (135,000 tons). New Zealand and Hong Kong were the other two main markets, taking 88,000 tons and 40,000 tons respectively. This year, the industry will benefit from a windfall order from the United States of America of some 80,000 tons to replace some of the sugar lost from Cuba. Queensland sugar cane is milled to the raw stage within the State, at 31 mills located in the principal sugar-producing areas. Fourteen of these are owned and run on a co-operative basis by the local sugar farmers. The principal sugar-growing areas are noted on the earlier map. The Queensland industry is efficient, and the general Australian problem of rising costs is being successfully combated by bulk handling installations along the coast, and by increasing mechanisation. The Queensland sugar cane industry is the only one in the world worked exclusively by white labour; the State's costs would appear to compare favourably with those of the West Indies, but less favourably with those of South African industry at present. Of Australian raw sugar consumption (551,000 tons), Queensland consumes 70-80,000 tons, all of which is refined in the State, at Brisbane and Bundaberg. Sugar for the rest of the Australian market is shipped in bulk to refineries at Sydney, Melbourne, Adelaide, and Perth.

Molasses is an important by-product from the milling process, total production of this commodity being in the region of 40 million gallons a year. Some of this is used for animal feeding, some as a fertiliser, and some is distilled to make industrial alcohols and rum. About 60 per cent. of Queensland's molasses is sold to 4 distilleries in the State, about 20 per cent. is used as a fertiliser, and about 15 per cent. as animal fodder. Some is distilled into power alcohol in Queensland, the capacity of the Sarina plant, near Mackay in North Queensland, being 4 million gallons of ethyl alcohol a year. The price of molasses is very low—£2 10s. to £2 15s. a ton—and there are ample supplies of it available. A by-product of the distilling process is a yeast extract which is used as the basis for the production in other States of "Vegemite".

Sugar cane bagasse is a waste product that is at present burnt as fuel in the mills. There is, however, a surplus in some areas for disposal, and more could be made available if there was a commercial demand for it.

Sugar cane wax has in the past been recovered, but competition from other waxes combined with changes in milling methods have stopped its production for the time being.

Grain crops.—Queensland has some 750,000 acres under wheat, mainly on the Darling downs, though small quantities are grown in other southern divisions, and in Central Queensland; it accounts for about 7 per cent. of Australia's production, most of which is grown in New South Wales and Western Australia. Total Australian production amounts to just over 2 per cent. of world supplies of wheat. Both production and acreage fluctuate widely; some 16 million bushels

will be produced in a good year, while during the crop year 1959-60 the harvest amounted to 13.5 million bushels. There are 12 flour mills in Queensland, all in the South, treating about 7.8 million bushels of wheat a year; in 1958-59 6.9 million bushels were treated, producing 141,000 tons of flour, 8,900 tons of wheatmeal, and 53,000 tons of bran and pollards.

The surplus for export overseas varies very widely; in 1957-58 only 274 bushels were exported, while in 1958-59 6.2 million bushels were exported. Most of it is exported as grain. Yields per acre in 1958, at 14.5 bushels per acre, were rather below both the world and the Australian average—17.2 bushels per acre and 20.7 bushels per acre respectively; but in 1958-59 Queensland's rate was 22.9 bushels per acre. An important point is that Queensland is Australia's major source of hard wheat, which is in increasing world demand, in contrast with the soft wheat that accounts for the majority of Australian wheat production.

Australia is not a great *maize* producer, but Queensland is the major producing State, with 54 per cent. of the country's production; most of the rest is grown in New South Wales. The 1959-60 crop amounted to 4.1 million bushels. Most of the State's production—over 70 per cent.—is grown in South Queensland; a further 20 per cent. is grown on the Atherton Tableland in North Queensland, where yields have been declining over many years, due both to land use, and the inability to find a suitable hybrid resistant to cob-rot. The use of hybrids has, however, been of considerable value in South Queensland, where yields per acre have gone up steadily from an average of 18.4 bushels per acre for the years 1934-35 to 1938-39, to 33.6 bushels per acre in 1958-59. The Atherton Tableland yields for the same year were 26.1 bushels per acre. World yields in 1958 averaged 30.2 bushels per acre, and in the United States of America, the world's principal grower of this crop, yields in 1958 were 51.7 bushels per acre. Most of the State's maize is consumed in Queensland for stock feeding but some is exported, both interstate and overseas.

Australia produces about 1 per cent. of world *barley* supplies, and of this, Queensland accounts for 13 per cent., South Australia being the main producing State. The State's production in 1959-60 amounted to 6.6 million bushels, of which the great majority was 2-row malting barley, produced almost exclusively in South Queensland. Production has been rising fast; from an average 953,000 bushels for the years 1949-50 to 1953-54, to a peak in 1958-59 of over 8 million bushels. Australian consumption of Queensland barley in 1958-59 was only about 2.2 million bushels, so that a very large proportion of the State's barley production is now exported overseas, mainly to Japan. Exports from the record 8 million bushel 1958-59 crop amounted to 6.5 million bushels. Queensland yields have been fairly consistently higher than those of other States, with the exception of Tasmania. In 1958-59, at 32.6 bushels per acre, it was better than that of Tasmania. Average world yield in 1959 was 23.7 bushels per acre.

The climatic conditions of Queensland and northern New South Wales are well suited to the growing of *grain sorghum*, and the production of this crop has expanded fast since the war, to a large extent replacing maize as a fodder. Queensland produces 87 per cent. of the total Australian crop, the majority from the Darling Downs in South Queensland, though a good quantity is grown in Central Queensland and the Maryborough division of South Queensland. Total production for the State in 1959-60 was 6.6 million bushels. Demand depends greatly upon the availability and price of the alternative feed grains, and so the quantity available for export varies greatly—in 1957 domestic consumption for stock feeding took some 20,000 tons, whilst only 75 tons were exported; the following year 13,800 tons were consumed locally, and 48,000 tons were available for export overseas. Yields per acre in Queensland have been fairly consistently higher than in New South Wales, and the development of hybrids is expected to have an important effect in future.

Other grains grown in the State include millet (1959-60 production 1.3 million bushels), oats (1959-60 production 394,000 bushels) and canary seed (1959-60 production 84,000 bushels).

Tobacco.—Queensland has produced tobacco since the early days, but it was only after the industry was given increased tariff protection, first in the 1930's, and then in recent years, and since irrigation projects in the north had got under way, that growing began to expand rapidly. Tariff protection takes the form of allowing Australian tobacco manufacturers a lower rate of duty on imported supplies provided a certain proportion of domestic leaf is used in manufacture. The proportion of domestic leaf used has been raised several times since the war. Production in Queensland has grown from an average of 3.4 million pounds in the years 1949-50 to 1953-54, to over 9 million pounds in 1959-60. Queensland is the major tobacco-growing State in Australia, producing about half the country's output.

Whilst total Australian leaf production in 1958-59 was 14 million lb., imports of unmanufactured tobacco in the same year were 39 million lb. In theory, therefore, there

is considerable room for expansion in tobacco-growing; but in practice, the use of local leaf is at present limited by quality. Sales are held in both Mareeba, in North Queensland, which produces about 80 per cent. of the State's crop, and in Brisbane, which also handles some tobacco from northern New South Wales. Buyer resistance to the quality of some of the offerings is indicated by the fact that at this year's Brisbane sales, 17 per cent. of the offerings were unsold, though the proportion was less at Mareeba, at 5.6 per cent. In general, leaf from the Mareeba-Dimbulah area seems to meet buyers' requirements, as does that grown in the Bundaberg area, leaf from which area has won the only two national championships ever held. It is in these areas particularly that expansion is taking place.

There is very little manufacture of tobacco in the State, and by far the largest proportion of the crop is sold to manufacturers in other States.

Cotton.—Cotton has been grown in Queensland for many years, the acreage varying greatly with the state of world markets, and more particularly with the varying support given to the crop by way of bounty by the Federal Government. Australia produces only a small proportion of its cotton requirements, most of the balance being imported; but of the quantities produced in the country, Queensland accounts for practically all. The State's production in 1959-60 amounted to 9.4 million pounds, most of it being grown in the Rockhampton area, the other main producing areas being Downs, Maryborough, and Townsville. Total Australian consumption of raw cotton runs just under the 50 million pound mark, so here again, there is in theory scope for a great rise in Queensland production; but once more, the difficulty of competing with the cheap labour countries in this labour-intensive crop restricts any great increase. The coming of mechanical harvesting, however, is expected to contribute greatly to a future rise in profitable production. The cotton bounty has been 14 pence per pound of seed cotton for some years, and this rate will apply until the end of 1963.

Cotton produced in Queensland is ginned in the State, at Brisbane and Rockhampton. The Cotton Marketing Board operates these ginneries, and also runs an oil mill, which treats cottonseed as well as peanut kernels and sunflowerseed. In 1958-59 the mill processed 1,180 short tons of cottonseed. There are two cotton spinning and weaving concerns in Brisbane.

Peanuts.—Nearly all the Australian production of peanuts is in Queensland, mainly in the Kingaroy district of the Maryborough Division, though some quantities are also grown on the Atherton Tableland and in the Rockhampton district. Production varies widely; in 1958-59 the Peanut Marketing Board had trouble in disposing of a record crop of 31,000 tons. The 1959-60 production was much less, at 18,000 tons, under the influence of quota restrictions put on by the Board. Peanut production does not lend itself to mechanisation easily, and the machinery available tends to be expensive. Costs of production in Queensland are therefore higher than those in other parts of the world, and this is not an export crop. It is only the surplus over and above what can be sold for direct consumption that is used for oil production. The edible nut demand is variously estimated at 18,000 to 25,000 tons, so that bumper crops such as that of 1958-59 leave some 6,000 to 13,000 tons for oil production, in addition to the usual proportion of culls unsuitable for eating as such.

Other Oilseeds.—Growing of other oilseeds has been increasing rapidly in the past few years, though, again, there are wide variations in the size of the various crops, due partly to climatic vagaries, and partly to changing government policy towards them. The seeds grown are—sunflower seed, which has an alternative use as birdseed (1958-59 production, 2,400 tons); linseed (1958-59 production, 6,500 tons); safflower seed (1958-59 production, 1,600 tons); soybeans (1958-59 production, 180 tons); and cottonseed, whose production depends primarily on that of cotton lint (1958-59 production, 1,180 tons). 1959-60 production was in general much higher than the figures for the previous year, and linseed production alone amounted to over 16,000 tons.

AUSTRALIA—CONSUMPTION OF VEGETABLE OILS—1958-59 (Tons)

	Imported	Made from Australian-grown crops
Peanut	6,297	1,201
Cottonseed	47	92
Soyabean	866	Nil
Linseed	10,554	4,201
Safflower	2,749	452
Sunflower	Not recorded separately	143

These figures show clearly the possibilities of expansion of the State's production if problems of disease and cost of production can be overcome. But Queensland costs of production are nearly double the cost of imported oils, so this problem is a serious one. Most of the oilseeds are grown on the Darling Downs, although some are grown in Central Queensland. Soybeans are mainly grown in the Kingaroy area.

Fruit.—Queensland grows the great majority of Australia's tropical fruits, such as pineapples, papaws and mangoes, and some of the country's temperate and sub-tropical fruits. Banana production in the State is now considerably below that of New South Wales, and accounts for only some 11 per cent. of Australian production. Pineapples, apples, and bananas are nevertheless the State's most important fruit crops. Pineapples are grown mainly in the coastal divisions around Brisbane, as are most of the State's bananas. Temperate fruits—principally apples—are grown in the granite belt around Stanthorpe near the New South Wales border. Citrus fruit is grown in the coastal divisions, principally in the Maryborough division. The State has some 3,000 acres under vines, the grapes being mainly used as table grapes.

FRUIT PRODUCTION 1958-59—QUEENSLAND AND AUSTRALIA ('000 Bushels)

	Australia	Queensland	Queensland production as a percentage of Australian production
Apples	13,044	649	5
Bananas	4,504	515	11
Oranges	5,904	351	6
Mandarins	372	151	40
Lemons and limes	662	75	11
Pears	4,738	64	1
Pineapples	5,195	5,099	98
Plums and prunes	802	56	7

Much of the pineapple crop is canned for home and export consumption. Seventy per cent. of fresh fruit production generally goes to the factories, some 61,000 tons in 1960. Competition in the export market hinders further development of this industry and there is much concern at present over the high level of plantings. Fresh pineapples from Queensland are sold all over Australia, about 36 per cent. being consumed in the State itself, 39 per cent. in New South Wales, 21 per cent. in Victoria, 4 per cent. in South Australia, and small quantities in Western Australia and Tasmania. Canned pineapple products include, apart from straight canned pineapple, pineapple juice, fruit salad, fruit cocktail, and glacé pineapple. The importance of the pineapple trade to Queensland is demonstrated by the fact that in 1958-59 no less than 60 per cent. of the State's production of canned pineapples was exported, mainly to the United Kingdom (70 per cent.), Canada (17 per cent.), and New Zealand (3 per cent.). In 1959, this trade was worth £2.9 million.

Vegetable and Miscellaneous Crops.—A wide variety of vegetable crops both for human and animal consumption is grown in the State, mainly in the south, and some are important: Queensland produces about 10 per cent. of Australia's potatoes, and about half the Commonwealth's pumpkins. Tomatoes are also grown as a commercial crop in the south, and at various places up the coast, the Bowen area being particularly successful with this crop. The State also has 25 per cent. of Australia's onion production. However, in temperate vegetables on a continent-wide basis, Queensland has difficulty in competing with the high yields of Victoria. Ginger is an interesting minor crop that might have development possibilities, although competition is fierce from the traditional ginger-growing areas of the east. Navy beans are grown on a small scale for the canning industry, mainly in Southern Queensland. Queensland is the main producer of "Queensland arrowroot", used for sizing, in pharmaceuticals, and for starch production.

QUEENSLAND PRODUCTION OF VEGETABLE AND MISCELLANEOUS CROPS, 1957-58

French beans	117,273 cwt.
Navy beans	9,926 bushels
Beetroot	1,446 tons
Cabbages	329,362 dozens
Cauliflowers	171,881 dozens
Carrots	2,045 tons
Cucumbers	153,608 bushels
Lettuces	313,579 bushels
Mangel-wurzels	2,071 tons
Marrows and squashes	372 tons
Melons—	
Water	4,135 tons
Rock	1,071 tons
Onions	18,653 tons
Greens peas	9,665 cwt.
Tomatoes	661,556 bushels
Turnips	2,115 tons
Potatoes	56,568 tons
Pumpkins	56,774 tons
Sweet potatoes	2,792 tons
Arrowroot	2,017 tons
Ginger	116,005 lb.

General.—It is true to say that almost all the crops produced in Queensland are capable of tremendous expansion if market conditions warranted it. The impetus to make a start on several of the crops that are now grown successfully and competitively in the State came from war-time conditions of scarcity. Because of labour costs, the further development of particular crops depends either on tariff protection or on extensive mechanisation; that the latter is capable of offsetting the disadvantage of low labour costs in other countries is clearly demonstrated by the case of sugar, although not all crops are at present capable of mechanisation. Much

work is often necessary, too, to develop strains of tropical crops that would suit the particular soil and climatic conditions of the State, both on the development of new crops and the further development of ones that are grown at present, and this is a delaying factor. But there are many more tropical crops that either have been grown experimentally or could be grown, including tea, various fibre crops and rice.

(c) Pastoral

Meat and by-products.—Queensland is Australia's principal beef producing State, with some 6 million beef cattle, or about half the total for Australia. Australia in turn is one of the major beef-producing countries of the world, after the United States, Argentina, Brazil, France, and West Germany, accounting for over 3 per cent. of the supplies of the world (excluding Russia). At least 60 per cent. of the State's beef and veal production is exported outside the State, and some 90 per cent. of this is for overseas markets. The main overseas market for Queensland beef and veal is the United Kingdom, but 1958-59 saw a great expansion in trade to the United States, principally in the lower grades suitable for manufacture; this year United States' purchases of Australian beef have exceeded those of the United Kingdom by about 70 per cent.

Queensland's sheep are almost entirely merino, so while the State has some 14 per cent. of Australia's sheep, it produces only about 6 per cent. of the mutton and lamb produced in the Commonwealth, and exports very little, only about 2 per cent. of it. Meat sales in the Brisbane area are a monopoly of the Queensland Meat Industry Board which operates the Brisbane Abattoir.

Pigs are bred, mainly as an adjunct to the dairying industry and in the south. Queensland is the principal pig-breeding State in Australia, with 30 per cent. of the country's pigs; but Australia is not an important world producer of pork and bacon. About a-quarter of Queensland's pork, bacon, and ham production is exported, mainly interstate. A pig marketing board operates in the north.

A large proportion of the State's production of canned and potted meat is exported overseas, and trade in these is second only to wool and beef in value among the State's overseas exports of pastoral products. Hides, too, are mainly exported, principally overseas, but also interstate. Only about a-quarter of the State's hides are tanned locally.

In 1958-59, Queensland's 44 meatworks slaughtered 1,251,724 cattle, 306,704 calves, 668,320 sheep, and 443,410 pigs to produce—

OUTPUT OF MEAT AND OTHER LIVESTOCK PRODUCTS, 1958-59

	Quantity	Value
	Tons	£m
Beef	207,900	40.7
Veal	7,866	1.7
Mutton	11,540	1.3
Lamb	3,175	0.7
Pork	5,834	1.8
Bacon and ham	7,228	3.4
Canned and potted meats	26,650	9.0
Small goods	10,690	2.8
Meat extracts	324	1.0
Meatmeal	22,380	0.8
Sausage casings	302	0.2
Lard	837	0.1
Other edible fats	5,626	0.5
Tallow	21,938	1.7
Fertiliser, dried blood, &c.	9,264	0.2
Hides (numbers)	1,557,075	2.7
Skins (numbers)	875,631	0.7

Wool.—Australia is, of course, the world's largest wool producer, accounting for 30 per cent. of the world's supplies; and Queensland is the third largest wool-producing State after New South Wales and Victoria. It accounts for about 15 per cent. of Australian production, and in 1959-60 the clip amounted to a record 236 million lb. greasy. It is the State's most valuable single commodity. Most of the wool produced in the State is exported directly overseas, though some is scoured or carbonised in the State before being exported. In 1957-58 only 20 million lb. of greasy wool were processed in the State's wool scouring, fellmongeries, and woollen mills, out of total State production of 204 million lb., and the woollen mills used the equivalent of 2.9 million lb. of greasy wool. This pattern reflects that of the whole of Australia: in 1958-59 out of total Commonwealth production of 1,590 million lb. of greasy wool, 106 million lb. were consumed or processed in Australia itself. Of this, some 70 million lb. were actually consumed locally in the production of woollen cloth, &c., the remainder being exported as tops, noils and yarn.

Dairying.—Australia is an important dairying country, producing about 24 per cent. of the world's milk supplies (excluding Russia); it is the world's sixth largest butter producer, after the U.S.S.R., the United States of America, West Germany, France and New Zealand. It produces considerable quantities of cheese, but is a comparatively minor cheese producer. Within Australia, Queensland is the third largest dairying State, after New South Wales and Victoria, with about a quarter of the Commonwealth's dairy cattle

spread for the most part along the coastal plains from the New South Wales border as far as Rockhampton, on the Darling Downs, and on the Atherton Tableland in the far north. In 1958-59 the State produced 258 million gallons of milk, and in 1959-60, 38,930 tons of butter and 8,500 tons of cheese.

AUSTRALIA—DAIRY PRODUCTION, 1958-59

	Milk		Butter	Cheese
	'000 Gallons	Tons	Tons	Tons
New South Wales	327,679	39,128	5,044	
Victoria	582,948	88,683	17,473	
Queensland	258,174	41,334	8,220	
South Australia	83,038	7,189	11,200	
Western Australia	52,167	6,229	1,191	
Tasmania	66,178	11,001	375	
Australian Capital Territory	980	4		
Total Australia	1,371,164	193,568	43,503	

Of the Queensland milk production of 258 million gallons, 185 million was used for butter production (including some sent as cream to New South Wales), 19 million gallons was used for making cheese, and 54 million gallons was used for other purposes. About 35 to 50 per cent. of the State's butter production is exported overseas. Exports of both butter and cheese fluctuate widely.

The average milk production per cow in 1958-59 in Queensland was rather below that for the other States, and for Australia as a whole, at 302 gallons; this compares with 523 gallons for the principal milk-producing State, Victoria, and 412 gallons for Australia as a whole.

The Australian dairying industry is subsidised and controlled, both on a Federal and State basis, and export prices are generally lower than actual production costs; Queensland itself has seen a decline in dairying recently due to the effect of rising costs on profitability.

Poultry.—Commercial poultry farming has been gaining ground in recent years, and for three or four years broiler raising has been out of the experimental stage; the Maryborough meatworks kills 15,000 broilers a week, mainly for the Queensland market. Shell egg production in 1958-59 amounted to 9.7 million dozen, and the State also produced 2 million lb. of liquid whole egg for the manufacture of cakes, pastry, and biscuits. Exports overseas of shell eggs in 1958 amounted to 717,000 dozen, and of liquid whole eggs 408,000 lb. New South Wales is Australia's principal poultry-keeping State, with almost half the country's egg production. Egg marketing is controlled by boards in South and Central Queensland, and there is an Australian Egg Board handling export.

Developments in farming.—Developments in pasture reclamation and improvement are transforming the Queensland pattern of livestock production. Foremost among these developments could be that of coastal fattening of beef cattle. Hitherto, beef has been a highly seasonal business, with most of the meatworks—particularly the export ones—operating for only seven months of the year, from March to October, after the winter rains have restored the pastures, and with them the beef cattle to the appropriate fatness. There has been some all-the-year-round killing of cattle fattened on the wetter coastal pastures for the local market, but this has been strictly limited. The new pattern that may emerge in due course is the breeding of store cattle in the far-western plains and in the Gulf country, and their shipment to new pastures in the wet tropics and further south for fattening; this will not only increase the carrying capacity of the State—some views suggesting that it could be trebled do not seem exaggerated—but will reduce the seasonal nature of employment in the meatworks.

Coastal fattening is particularly interesting in the coastal portions of the Cairns division. Here, it has been shown that excellent results may be obtained from planting new pastures cleared from tropical rain forest to a mixture of good-quality grass and tropical legumes. The addition of the legumes adds nitrogen to the soil and so helps to maintain the palatability and nutritional value of the grasses, as well as being itself a rich source of protein. The cost of clearing and planting (£30-40 an acre), is a drawback, and there are technical difficulties still to be overcome—but this is a development which could in due course bring in 100,000 to 200,000 acres of new pasture carrying at least 3 beasts on 4 acres—far greater than the capacity of the seasonal pastures further west. In this particular area there is however some conflict of interest between using land for cattle and for timber.

Further interest attaches to the possibility of improving the extensive speargrass pastures further south—estimated at 43 million acres—with the use of Townsville lucerne and superphosphate. The brigalow belt, extending some 500 or 600 miles along the coast from New South Wales northward as far as Collinsville and covering some 23 million acres of which about 15 million acres is untouched, hold great promise for agricultural and pastoral development, if the formidable problems of controlling sucker re-growth at an economic cost can be conquered, for the brigalow belt soils are generally of good fertility. It is in Central Queensland

that the brigalow belt approaches most near to the coast, and in this area the potential for brigalow country development is greatest. Finally there is the 200 million acres of wallum country—poor soil, but soil which could be developed with the addition of the trace elements as has been successfully done in other parts of Australia.

Lack of finance, the decline in prices for primary agricultural and pastoral products, the system of leaseholds for land practised over many years in Queensland, the unsatisfactory stock water supply position; these are some of the factors that have prevented the rapid development of the State's vast areas of unused land. Given the stimulus of demand and finance, the State's production of these classes of commodity could be vastly increased. Soil erosion also affects large areas of the land presently being used for crop production, particularly on the Darling Downs. It has been estimated that some 940,000 acres of land is affected by water erosion, 60 per cent. of it on the Darling Downs, whilst 50,000 acres have been withdrawn from cultivation due to erosion. Land mismanagement must bear a considerable part of the responsibility for this; but there are many signs that attitudes are changing, and interest in maintaining the State's heritage of good soils growing. Interest, too, in the improvement of pastures in the downs and flat country west of the Dividing Range is growing, and the research and advisory resources of the State—already slender—are being stretched to the utmost.

(d) Forest products

The area of natural forest in Australia is small in relation to the size of the country—6.3 per cent. of the area of Australia is afforested—but total production is not insignificant in relation to the world; Australia accounts for about 1 per cent. of the world's log production. Queensland has the fourth largest forested area among the States, after Western Australia, New South Wales and the Australian Capital Territory, and South Australia; but forested area means little in the Australian context, and 70 per cent. of the South Australian total is malee suitable only for firewood. Of the valuable timber, Queensland has a much greater proportion, and has the largest area of forest reservations, with 9 million acres out of an Australian total of some 40 million acres.

There are two principal forestry areas in Queensland. The New South Wales border to north of Maryborough area, has a large proportion of Australia's scant native softwoods, principally the slow-growing cypress pine, as well as the main commercial eucalyptus, ironbark and spotted gum. The wet coastal strip in Northern Queensland has a large proportion of the continent's best furniture, cabinet-making, and veneer woods, principally Queensland walnut, Queensland maple, silkwood, red cedar, silky oak, and silver ash.

The shortage of softwoods in Australia has led to a considerable growth of plantation growing of these timbers, and Queensland has the fourth largest area of these, after South Australia—whose natural deficiency was greatest—Victoria, and New South Wales. In mid-1960 the extent of these plantations was 93,000 acres, increasing towards the target of 200,000 acres at the rate of 5,000 acres a year. These are now yielding an increasing production of merchantable thinnings, last year 27.6 million super. feet. The plantations consist largely of the native hoop pine and various exotic conifers, principally native to the United States.

The gradual exhaustion of the privately held forest land has led to an increase in the percentage of Queensland timbers cuts from Forestry Department areas.

QUANTITIES OF VARIOUS SPECIES OF LOG TIMBER CUT FROM CROWN FORESTS (Million superficial feet)

	1958-59	1959-60
Hoop and bunya pine	40.8	35.0
Kauri pine	2.0	2.1
Cypress pine	24.9	26.8
Forest hardwoods	83.3	88.2
Scrub hardwoods	10.2	12.8
Cabinet woods	19.1	17.9
Miscellaneous	27.1	28.3
Plantation timbers (mainly hoop and slash pine) ..	20.3	27.6
Total	227.7	238.7

Competition from imported timbers and the need to conserve the State's forest resources (it has been estimated that the maximum life of the Brisbane and Toowoomba zones is 10 years), combined with the decline in building since the imposition of the credit squeeze, have led to a fall in the number of sawmills operating in Queensland in recent years, and in 1958-59 there were 557 such mills in operation against 590 in the previous year and 600 in the year before that.

QUEENSLAND SAWMILLS—1958-59 (Million superficial feet)

Log timber used (Australian) :	
Softwood (pines)	110.8
Hardwoods	235.0
Other timbers	57.5
Rough-sawn timber (Australian) produced :	
Softwoods (pines)	63.6
Hardwoods	137.7
Other timbers	32.1
Sleepers made	24.4
Floorboards and weatherboards made	29.4

In 1958-59 there were 29 plywood mills in Queensland, which with New South Wales accounts for the great majority of Australia's production. Eight were in the Brisbane area, and 18 in the Cairns district; but the freeing of imports has put this industry under severe strain from imported plywoods, and production has decreased considerably. In 1957-58 131 million square feet of plywood, and 129 million square feet of veneers were produced in the State.

Exports of timber are not important—Queensland eucalypt hardwoods are not as satisfactory for building timbers as imported softwoods, which are easier to work. Nevertheless a considerable value of plywood has in the past gone to other States. North Queensland is in a unique position with its fine cabinet woods, and it is in these that the possibilities of development of the timber industry in the north lie. They already have a good acceptance in some overseas markets and in the rest of Australia—a good proportion of the timber cut is sent interstate, and about 5 per cent. is exported overseas. With good control of the rainforests, supplies of these valuable woods could be plentiful in twenty years' time. But it is precisely these rain forests that are potential cattle-fattening areas, and this conflict is reflected all over Australia—the naturally forested areas are in many cases also potentially the best pastoral and agricultural lands.

Queensland eucalypt hardwoods are not in general suitable for the production of particle board. Hardboard can be made from mill waste, of which there are plentiful supplies in all the main sawmilling areas of the State; the tops of the trees and forest and plantation thinnings are, however, the main raw material for hardboard and, once again, there are ample and growing supplies of these at the plantations grow. There is one factory producing a large proportion of Queensland's present requirements of board, with a capacity of 55 million square feet a year, situated in south-east Queensland, near the principal market and within easy reach of timber resources.

(e) Fisheries

Fish stocks in Australian waters are in fact comparatively low by northern hemisphere standards, despite the wide variety of fish that live in them. Australian demand for fish is small, but even this limited demand is not met by local production, and imports account for some 40 per cent. of the country's fresh and frozen fish requirements.

Queensland accounted in 1958-59 for just over 13 per cent. of Australia's fisheries production (excluding crustaceans, molluscs and shell). The development of its fisheries is limited by the fact that most of the commercial fish on the east coast are migratory, and by the difficulties of trawling off the Barrier Reef (which abounds in ground fish). Whilst Gulf fish are still fairly plentiful and the industry is capable of some development if transport problems can be overcome, the rapid development of fishing on the east coast is probably limited to large-scale and indiscriminate fishing by factory ships for the production of fishmeal or some homogeneous fish food for export to the countries with low protein diets, such as has been considered by the Bowen Regional Research and Promotion Bureau. The sharks that abound between the north Queensland coast and the Barrier Reef are mainly small, and their liver oil is deficient in vitamins. Of the commercial fish taken in Australian waters, Queensland produces over 30 per cent. of the mullet, very small quantities of shark and tuna, which are commercially fished further south, about 5 per cent. of the flathead and snapper, and some 15 per cent. of the whiting. It also produces about a quarter of those classified as "other fish" in official statistics, which includes the valuable barramundi. As far as total fishing and whaling operations are concerned, Queensland comes third among Australian States, after Western Australia and New South Wales, with a 1958-59 gross value of £1.5 million, about 12½ per cent. of the Australian total in that year. The number of people employed, however, 10,556, was higher than in any other State, and Queensland had in 1958-59 about 45 per cent. of the people employed in the general fishing industry in Australia, excluding oyster and shell fisheries. It had about the same proportion of the total Australian number of fishing boats, but the value of boats and equipment was under 20 per cent. of the Australian total.

It is in the fishing of crustaceans that the principal development of the Australian and Queensland industries has taken place in recent years. The principal development has been in frozen crayfish tails, which are sold on the United States market; these come mainly from Western Australia, whilst Queensland's chief development has been in prawns. Production of these has expanded from 700,000 lb. in 1953-54 to 3.5 million lb. in 1958-59. Production of crabs has remained static at between 600,000 and 700,000 lb. estimated gross weight since 1955-56 whilst lobster production has expanded from 12,000 lb. gross weight to 25,000 lb. gross weight in the same period. Queensland is Australia's chief source of both crabs and lobsters. Queensland crustacean production amounts to about 12 per cent. of Australian production by weight, and about 11 per cent. by value. Large quantities of prawns are exported to other States, and

exports overseas, principally to the United States, have also expanded.

Molluscs are also fished in Queensland. Whilst oyster fishing on a commercial scale is largely confined to New South Wales, which produces over 90 per cent. of Australia's oysters, Queensland has a small steady production which in 1958-59 amounted to 407,000 lb. gross weight. Up to 1956 scallops were fished only in Tasmania, but in that year fishing started in Queensland. Since then production has varied widely, and amounted to 51,000 lb. gross weight in 1958-59. This was only 1 per cent. of Australian production, but there are large beds, and this trade is capable of considerable expansion.

In 1957-58 Queensland imported £70,000 worth of fresh and frozen fish from abroad, and £17,000 worth from other States. Smoked, dried, and salted fish imports in the same year amounted to a further £77,000 from abroad and £3,000 from other states. Australian imports of canned fish, a large proportion of it from Japan, are more than double the output of Australian factories.

Australia is the world's largest producer of pearl-shell, which is fished all round the north tropical coast of the continent, from Cooktown in Queensland. Queensland production expanded fast in the years after the war to reach 1,191 tons in 1949, but has since declined to less than half that quantity. Trochus shell is taken from Mackay northwards, but this trade is again declining, and production in 1958-59 amounted to 887,000 lb. against 2.8 million lb. in 1954-55. Total Australian exports of unmanufactured shell in 1958-59 were worth £832,000 against over £6 million in 1956-57. Of the former figure pearl shell accounted for £612,000 and trachous shell for £212,000.

Queensland has a whaling station to take advantage of the whales migrating from the Antarctic to their breeding grounds further north, and their return in the spring.

3. LABOUR

The number of wage and salary earners in civilian employment in Queensland in March 1961, excluding rural workers, female private domestics, and defence forces, was 383,000. Registered unemployed in the same month—near the seasonal peak in Queensland—amounted to 20,000, giving a total potential force of wage and salary earners (excluding the categories mentioned above) of 403,000. It is hard to get at a figure for the remaining classes of employee—rural, female private domestic and others—but at the time of the last census, 1954, these amounted to 42,300. Taking into account natural increase and immigration since then, but also the fact that a good proportion of the unemployed already counted were almost certainly rural workers, we think a figure of 45,000 a reasonable one to take for these classes of employee. Of the 45,000, some 23,000 are accounted for by full-time employees on rural holdings and the remainder by casual and seasonal employees. The addition of employers, self-employed, and full-time helpers—in mid-1959 some 110,000 of which about 65,000 are farmers, graziers, and their unpaid helpers—gives a total of those either in work or looking for work of 558,000.

The table that follows breaks down the figure of 383,000 mentioned above into industrial groups, and into male and female workers. The percentages shown in the last section of the table—bearing in mind that rural workers are not included—gives a good picture of the employment structure of the State as compared with the rest of Australia. Queensland has a lower proportion of its wage and salary earners employed in manufacturing than either New South Wales (40 per cent.) or Victoria (43 per cent.) or of Australia as a whole (38 per cent.)—Queensland has 29 per cent. thus engaged. Among the States, only Western Australia has a smaller proportion of its work force engaged in manufacturing than Queensland, with 26 per cent. Here again, it must be borne in mind that April is fairly near the peak in seasonal unemployment; but if the difference in employment of some 3,000 between April and the high employment month of September in the meatworks and sugar mills is taken into account, the percentages are not materially altered; Queensland still has only 10 per cent. of Australia's manufacturing employment against 13 per cent. of its labour force. The proportion of those employed in "Other manufacturing" shows that small "workshop" manufacturing is more widespread than in other States.

The fact that Queensland has a high proportion of those employed in forestry, fishing, and trapping, and in mining and quarrying, in Australia, is a reflection of the importance of these primary producing occupations both to the State and to Australia. The large proportion of employment in transport—particularly rail and air transport—is an indication both of the difficulties of transport and of the extent to which the State has attempted to overcome these difficulties.

Of the total wage and salary earners in Queensland, 28 per cent. were government employees (Commonwealth, State, local, and semi-governmental), and the remaining 72 per cent. were in private employment.

The importance of rural industry and self-employment to the State is shown by the fact that whilst Queensland has 14 per cent. of Australia's population and only 13 per cent. of the Commonwealth wage and salary earners, excluding rural

industry, total employment figures show that at the time of the 1954 census it had 15 per cent. of Australia's total male labour force.

WAGE AND SALARY EARNERS IN CIVIL EMPLOYMENT—APRIL 1961
(EXCLUDING RURAL WORKERS, FEMALE PRIVATE DOMESTICS, AND DEFENCE FORCES)

Industrial Group	Queensland ('000)			Australia ('000)			Queensland Proportion of Australian Total (Per cent.)		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Forestry, fishing and trapping ..	5.2	..	5.2	24.1	0.2	24.3	22	..	22
Mining and quarrying ..	9.6	0.3	9.9	48.8	1.2	50.0	20	..	20
Manufacturing—									
Factories <i>a</i> ..	80.5	16.6	97.1	824.8	258.2	1,083.0	10	6	9
Other <i>b</i> ..	11.1	2.9	14.0	71.6	8.3	79.9	15	35	18
Total ..	91.6	19.5	111.1	896.4	266.5	1,162.9	10	7	10
Building and construction ..	33.7	0.7	34.4	205.9	6.3	212.2	16	11	16
Road transport ..	14.8	1.7	16.5	92.8	11.1	103.9	16	15	16
Shipping and stevedoring ..	7.7	0.3	8.0	47.3	2.7	50.0	16	11	16
Rail and air transport ..	20.9	1.2	22.1	104.0	8.5	112.5	19	14	19
Communication ..	10.1	2.6	12.7	72.5	19.6	92.1	14	13	14
Property and finance (including banks)	9.9	5.9	15.8	76.7	54.7	131.4	13	11	12
Retail trade ..	16.2	18.4	34.6	136.8	134.5	271.3	12	14	13
Wholesale and other commerce ..	22.6	7.5	30.1	161.3	50.8	212.1	14	15	14
Public authority activities, n.e.i. ..	12.7	4.7	17.4	107.9	32.7	140.6	12	14	12
Health, hospitals, &c. ..	4.8	12.5	17.3	29.8	94.1	123.9	16	13	14
Education ..	7.3	8.3	15.6	55.5	68.6	124.1	13	12	13
Other industries ..	15.4	17.2	32.6	131.5	111.3	242.8	12	15	13
Total ..	282.5	100.8	383.3	2,191.3	862.8	3,054.1	13	12	13

(a) Employed in industrial establishments employing four or more persons, or in which power other than manual power is used. Those actually employed in manufacturing, excluding those engaged in selling and distribution, &c., are covered.

(b) Employed in industrial establishments outside the definition in (a) and those employed in factories but not actually in a manufacturing activity.

(a) Skills

There is a fairly general shortage of skilled labour for industry throughout Queensland. But this is to some extent offset by the adaptability of Queenslanders and their willingness to learn, which was confirmed by most of the employers interviewed by us, including some who had had experience of skilled labour in other parts of the world. The general impression left with us was that these employers regarded Queensland labour as less skilled but more hard-working than that in the United Kingdom.

Within the industrial group, there are no particular skills that have grown up, in which Queensland has an advantage over other States—apart from the industries directly connected with the State's primary production, meatworks and sugar milling—Queensland industry has tended to be a small-scale cross-section of Australian industry as a whole. There are some old-established engineering, ship-building, and foundry concerns in the south, which compete successfully in the southern States.

EMPLOYMENT IN FACTORIES—1958-59 AVERAGE—SKILLED AND UNSKILLED WORKERS

Nature of Industry	Males	Females	Total
Treatment of non-metalliferous mine and quarry products ..	1,506	2	1,508
of which—Cement ..	731	2	733
Bricks, pottery, glass, &c. ..	1,124	12	1,136
Chemicals, dyes, paints, oils, &c. ..	1,054	133	1,187
Industrial metals, machines, and conveyances ..	28,564	603	29,167
of which—			
Foundries (ferrous) ..	713	..	713
Plant, equipment and Machinery, including machine tools ..	4,442	221	4,663
Other engineering ..	1,366	1	1,367
Electrical machinery, cable and apparatus ..	1,472	64	1,536
Construction and repair of tramcars and railway rolling stock ..	7,804	15	7,819
Motor vehicle construction and assembly ..	706	4	710
Motor vehicle repairs ..	5,235	6	5,241
Construction and repair of motor bodies ..	899	1	900
Ship and boat building and repairing, and marine engineering ..	1,251	1	1,252
Agricultural machines and implements ..	1,040	7	1,047
Galvanised ironworking, tinsmithing, pipes, tubes and fittings ..	1,095	75	1,170
Textiles and textile goods ..	544	1,280	1,824
Skins and leather ..	834	117	951
Clothing (except knitted) ..	1,519	5,127	6,646
Food, drink, and tobacco ..	19,426	2,929	22,355
of which—			
Bakeries ..	1,246	311	1,557
Sugar Mills ..	5,402	17	5,419
Bacon curing ..	1,271	144	1,468
Meat and fish preserving ..	6,130	296	6,426
Sawmills, joinery, boxes, &c., wood turning and carving ..	8,335	353	8,688
of which—			
Sawmills ..	5,250	41	5,291
Plywood mills and veneers ..	1,419	277	1,696
Joinery ..	1,023	13	1,036
Furniture of wood, bedding, &c. ..	2,000	274	2,274
Paper, stationery, printing, bookbinding, &c. ..	3,454	1,082	4,536
of which—			
Newspapers and periodicals ..	1,528	111	1,639
General printing ..	1,271	614	1,885
Rubber ..	1,110	222	1,332
of which—			
Rubber goods (including tyre-making) ..	702	221	923
Total (Including Others) ..	70,061	12,247	82,308

(b) Geographical distribution

The proportion of the State's total labour force in each division follows closely the population distribution; North Queensland, however, has a rather larger proportion of its population working than South Queensland; South Queensland has more of its female population in work than either of the two other divisions—this is accounted for by the concentration of light industry and clerical work in the south, and the preponderance of primary production unsuited to female labour in the north and central portions of the State.

POPULATION AND TOTAL WORK FORCE—1954 CENSUS

Division	South	Central	North	Total
Proportion of Queensland population (per cent.) ..	74	9	17	100
Males—				
Numbers ..	296,853	39,455	83,909	420,217
Proportion of Queensland total ..	71	9	20	100
Females—				
Numbers ..	84,227	8,810	16,600	109,637
Per cent. ..	77	8	15	100
Total—				
Numbers ..	381,080	48,265	100,509	529,854
Per cent. ..	72	9	19	100

(c) Female labour

As we have seen, the south has a higher proportion of female labour than the rest of the State. Twenty-three per cent. of the labour in Brisbane's factories is female, whilst the average for the rest of the State is only 14 per cent. This compares with an Australia-wide average of 23 per cent.; the State with the highest proportion of female labour in its factories is Victoria, with 28 per cent. In the United Kingdom the proportion is 33 per cent., rising in some years—such as the cotton milling areas of Lancashire, traditionally a stronghold of female labour—to 42 per cent. Even allowing for a rather greater masculinity of the population in Queensland than in the two big manufacturing States or in the United Kingdom, there is clearly a sizeable potential of female labour for light industry both in Brisbane and in the other centres in the State. If it is assumed that the remainder of the State has proportionately the same potential of female labour as Brisbane has already, there are an extra 3,120 women able to go out to work in factories. If the Victorian average is applied, this rises to 5,220, with an extra 4,160 in Brisbane, giving a State potential of 9,380. If the United Kingdom average is taken, the potential goes up by an extra 9,000 in Brisbane, and 7,600 in the rest of the State, giving a total of 16,000 in addition to those already working.

It seems reasonable to assume that the Victorian average represents the immediate potential under the social and other conditions ruling in Australia. The following figures give the potential extra female work force in the principal manufacturing centres of the State, on this assumption. They are based on the actual femininity of the work force in each centre on January 31, 1959.

POTENTIAL FEMALE LABOUR IN ADDITION TO THAT
ALREADY EMPLOYED (Number)

City—		
Brisbane	4,160	
Bundaberg	330	
Dalby	100	
Ipswich	1,200	
Maryborough	540	
Toowoomba	580	
Warwick	150	
Total South Queensland	7,060	
Total Central Queensland	710	
Cairns	240	
Innisfail	200	
Mackay	480	
Townsville	760	
Total North Queensland	1,680	
TOTAL QUEENSLAND	9,450	

It cannot, of course, be assumed that this labour is there just for the asking; in Queensland—but to a lesser extent in Brisbane—it is not yet considered fully socially acceptable for a man's wife to work, and we were told that the average time for a woman to go on working after she is married is four months; but attitudes change, particularly if there are attractive opportunities for work in the neighbourhood. In the United Kingdom over 40 per cent. of the female work force is married.

(d) Projections of the labour force

Projections of population in Australia are always dangerous because of the extreme variability of immigration, depending upon economic conditions in Australia, in the United Kingdom, and in the other principal sources of immigrants. The Bureau of Census and Statistics in Brisbane has prepared population forecasts of the State based on age-specific

fertility rates obtained for the years 1957 and 1958, survival rates from the Australian Life Tables, 1953-55, and a net immigration figure of 10,000 a year, which was approximately the average rate between 1946 and 1951, with sex and age distribution obtained by comparing the 1947 and 1954 census results and deducting natural increase. These are not to be taken as official forecasts of the Deputy Commonwealth Statistician, being merely hypothetical calculations of levels of population if the various assumptions upon which they were based were realised. The purely hypothetical nature of the net immigration figure of 10,000 a year may be illustrated by comparing it with the approximate estimates made of net immigration in recent years (subject to revision after the current census), as follows:—

NET IMMIGRATION—YEAR ENDED JUNE 30

1956	5,152
1957	5,057
1958	-1,446
1959	990
1960	-1,219

The figures of natural increase, however, may be assumed to be reliable and for this reason the figures given below differentiate between estimated increase of population of working age by natural increase, and those of increase by net immigration. Primary school leaving age in Queensland is 14, and in 1958, 53 per cent. of children aged 15 were still at school, 28 per cent. of 16-year-olds, and 14 per cent. 17-year-olds. As the Bureau's figures did not break down further the 15-19 age group it was impossible to take this into account, and this must be borne in mind in considering the figures that follow. Retirement age was taken as the age at which men and women qualify for Commonwealth pensions—65 and 60 respectively.

PROJECTION OF POPULATION OF WORKING AGE—QUEENSLAND

	1965	1970	Increase	1975	Increase
			Per cent.		Per cent.
Men (15-64 inclusive)—					
Exclusive of immigration	485,667	519,433	7	554,953	7
By immigration (net)	43,802	68,210	..	94,839	..
Total	529,469	587,643	11	649,792	11
Women (15-59 inclusive)—					
Exclusive of immigration	429,320	462,486	8	496,194	8
By net immigration	30,330	48,247	..	68,661	..
Total	459,650	510,733	11	564,855	11
Persons of working age—					
Exclusive of immigration	914,987	981,919	8	1,051,147	7
By net immigration	74,132	116,457	..	163,500	..
Total	989,119	1,098,376	11	1,224,647	11

The low birth rate of the early 1930's is reflected in the comparatively low figures for the 25-34 age groups in the 1965 projection by age given below. The 20-24 age group—

born in the war years—is also abnormally low; but increasing numbers of school leavers will begin to enter the work force from now on as a result of the post-war "bulge".

PROJECTION OF POPULATION OF WORKING AGE BY AGE GROUPS
(Excluding immigration after June 30, 1955)

	1960		1965		1970		1975	
	Males	Females	Males	Females	Males	Females	Males	Females
15-19	58,046	56,090	72,491	69,029	75,807	72,822	82,792	79,305
20-24	48,234	46,261	57,544	55,918	71,864	68,818	75,151	72,599
25-29	45,915	42,988	47,811	46,095	57,039	55,717	71,234	68,571
30-34	51,971	46,933	45,530	42,793	47,410	45,886	56,561	55,464
35-39	52,544	47,974	51,461	46,626	45,083	42,513	46,945	45,586
40-44	46,883	44,851	51,823	47,494	50,754	46,160	44,464	42,068
45-49	46,483	43,316	45,867	44,151	50,700	46,753	49,654	45,440
50-54	40,905	36,261	44,781	42,266	44,187	43,081	48,843	45,620
55-59	33,268	30,722	38,364	34,948	41,999	40,736	41,442	41,521
60-64	27,760	..	29,995	..	34,590	..	37,867	..

Immigration has been omitted from the above table because, apart from the uncertainty of immigration trends in general, on a State basis they tend to be misleading except in an Australia-wide context. Immigrants go where there is work, and in the past, Queensland has not provided the same expansion of jobs—except for mainly seasonal employment in the sugar fields—as other States. We believe that large new industrial undertakings would have no difficulty in attracting both immigrants and native Australians from other States, and the proportion of immigrants coming permanently to Queensland must depend greatly on the advent of such undertakings. A good illustration of this is provided by the experience of Mount Isa Mines, which, despite a high labour turnover, and the mine's isolation, has no difficulty in getting the labour it requires, a large proportion of whom are immigrants. Admittedly, the pioneering at Mount Isa was done in the days of the Depression, when work was hard to find, but apart from mining, no large-scale new development is likely to be in such hard surroundings.

The figures that follow show clearly that since 1939 Queensland's expansion, both in mean population and in industrial employment, has not matched that of other less-developed States. The State's development has sometimes matched or bettered that of New South Wales and Victoria; but the concentration of Australia's population and industry in these States constitutes a powerful magnet for immigration—particularly skilled immigrants—in the variety of jobs available.

MEAN POPULATION

State	1938-39	1959-60	Increase
	'000	'000	Per Cent
South Australia	595.1	933.6	56.9
Western Australia	466.9	725.1	55.3
Victoria	1,872.3	2,851.1	52.3
Tasmania	237.6	347.3	46.2
Queensland	1,008.2	1,448.2	43.6
New South Wales	2,735.4	3,792.7	38.7
Six States	6,915.5	10,098.0	46.0

WAGE AND SALARY EARNERS
(EXCLUDING RURAL WORKERS, FEMALE PRIVATE DOMESTICS, AND DEFENCE FORCES)

State	July 1939	Dec. 1960	Increase
	'000	'000	Per cent.
Tasmania	49.0	94.0	91.8
South Australia	140.7	268.3	90.7
Victoria	500.4	902.5	80.4
Western Australia	109.1	194.5	78.3
New South Wales	679.9	1,210.1	78.0
Queensland	226.0	385.5	70.6
Six States	1,723.1	3,054.9	77.3

FACTORY EMPLOYMENT
(WAGE AND SALARY EARNERS IN FACTORIES)

State	1938-39	1959-60	Increase
	'000	'000	Per cent.
South Australia	42.0	95.4	127.1
Tasmania	13.2	28.1	112.9
Western Australia	22.1	46.2	109.0
New South Wales	219.5	448.9	104.5
Queensland	51.5	99.5	93.2
Victoria	193.9	362.0	86.7
Six States	542.2	1,080.1	99.2

FACTORY EMPLOYMENT PER THOUSAND POPULATION,
1959-60

Victoria	127
New South Wales	118
South Australia	102
Tasmania	81
Queensland	69
Western Australia	64
Six States	107

Another factor that must be taken into account when considering the labour potential of Queensland is the large numbers of seasonal labourers, estimated at 18,000 to 20,000. These are highly mobile. The sheep-shearers—who number about 2,000—may well be left out of account, but the cane cutters represent a potential source of permanent labour as cane-cutting gets more and more mechanised. A large proportion of cane-cutters come from the south for the season, and it is a matter of pure conjecture how many of them would stay in Queensland if some suitable permanent employment offered itself; to many of them the attraction of cane-cutting is the nomadic life and the high wages offered by such temporary employment, but against this must be set the tendency for there to be a more settled employment picture in Australia as a whole. Some 8,000 sugar cane cutters are employed at the height of the season over the whole of the State. Employment in the sugar mills varies from a peak of about 8,000 in July, August, September, to a trough of 4,000 in December. In the meatworks the peak comes in April, May, June, when over 8,000 are employed; employment is more stable than in the sugar mills, and only drops to about the 5,000 mark in December and January. Other seasonal occupations—tourism, cane carting, &c., account for about 2,000. Of the resultant total of seasonal labourers, about 40 per cent. or 7,500, register for employment in the off-season.

(e) Technical Training

Technical education is, of course, extremely well developed and flourishing in Australia; Queensland is no exception to this. It has 13 Technical Colleges and apprenticeships and certificate courses by correspondence are available from the Technical Correspondence School. Correspondence courses in commercial subjects are available from the State Commercial High School and College. The Central Technical College also offers a diploma correspondence course in engineering. Of the 32,000 students enrolled in 1958, 12,000 were doing apprenticeship courses, about a third of them by correspondence; 1,600 were taking diploma courses, principally in sugar chemistry, engineering, pharmacy, commerce, and industrial chemistry, and 1,400 were doing certificate courses, mainly in accountancy, agricultural science, and building. The University of Queensland offers degree courses in agriculture, applied geology, architecture, arts, commerce, dentistry, divinity, economics, education, engineering (chemical, civil, electrical, mechanical, mining and metallurgical), forestry, industrial chemistry, law, medicine, pharmacy, physiotherapy, science, social studies, surgery, surveying, and veterinary science.

(f) Wages

The system of Commonwealth and State basic wage and margin awards is clearly described in the Commonwealth of Australia Year Books. The Commonwealth awards are much more limited in their application to Queensland than to other States—in April 1954, 219,000 male workers were under State award, and only 51,000 under Federal award; the

equivalent figures for female workers were 65,000 and 20,000. At the same date 40,000 males and 19,000 females were working under no award. The Federal award is preferred by firms employing process workers (semi-skilled) since the State award does not break down the categories of job sufficiently. The Commonwealth award rate for Brisbane has just been raised from £12 18s. for males to £13 10s. and from £9 13s. 6d. to £10 2s. 6d. for females, under a Commonwealth-wide award made in early July, 1961.

At the end of May 1961, the State award basic wage rate for Brisbane was raised from £14 a week to £14 4s. for men, and from £10 10s. to £10 13s. for women. This rate is applicable throughout the south-eastern portion of the State, including Rockhampton. Additional amounts, known as parities, are payable in the outlying districts, to make up for the higher cost of living in them. The parity for the south-western district, which in this context includes almost all of western, central and southern Queensland, is 10s. 6d. a week; the Mackay district has a special parity of its own, 9s. The north-eastern district, which includes Townsville, the whole of the wet tropical coast, Cairns, and its hinterland, has a parity of 10s. 6d. a week; the north-western district, which includes the mining districts of the north-west, has a parity of £1 12s. 6d. Half these amounts are allowed for females.

These figures are not directly comparable with those in other States, both because the various margins and loadings must be taken into account, and because the relative importance of the State and Federal awards vary; in some States, the Federal basic wage award and the State award are identical. The Commonwealth Statistician prepares weighted figures of minimum weekly wage rates, comprising basic wage, margin, and loading, on a State by State basis, and these are given below.

MINIMUM WEEKLY WAGE RATES, MARCH 1961—ALL AWARD

	Males	Females
	s. d.	s. d.
New South Wales	363 11	262 9
Victoria	349 10	246 8
Queensland	353 11	241 6
South Australia	342 1	242 9
Western Australia	359 11	252 3
Tasmania	352 6	239 1
AUSTRALIA	356 0	252 7

Actual wages paid are, of course, higher than these, and the figures of average weekly earnings per employed male "unit" that follow provide a comparison between the cost of labour in different States. They are derived from information on employment and wages and salaries recorded on Payroll Tax returns, from other indirect collections, and from estimates of the unrecorded balance. In addition to wages at award rates, earnings of salaried employees, overtime earnings, over-award and bonus payments, &c., are included. The total sum paid in each State has been divided by total civilian employment expressed in male units; male units represent total male employment plus a proportion of female employment based on the approximate ratio of female to male earnings. The same ratio has been used for each State, and because the average ratio of female to male earnings varies between States, precise comparisons between average earnings in different States cannot be made on the basis of the figures shown. Moreover, they have not been adjusted seasonally, and so in the case of Queensland, the high employment quarters of September and December present a rather less favourable picture from the cost of labour point of view than the low employment ones of March and June. Nevertheless, taking into account all these factors, it is still certain that Queensland labour is paid less than that further south, and less than that in Australia as a whole.

AVERAGE WEEKLY EARNINGS PER EMPLOYED MALE UNIT (£)

	1959-60	Quarters in 1960				Quarter in 1961
		Mar.	June	Sept.	Dec.	Mar.
New South Wales	22.77	21.78	23.84	23.65	25.16	22.87
Victoria	22.28	21.52	23.30	23.25	24.44	22.32
Queensland	19.89	19.08	20.23	21.05	21.90	19.78
South Australia	20.61	20.09	21.22	21.35	22.11	20.70
Western Australia	19.46	18.73	20.11	20.58	21.11	19.58
Tasmania	20.71	20.10	21.98	20.62	21.68	20.90
AUSTRALIA	21.76	20.94	22.66	22.68	23.87	21.83

In the north and north-west of the State the basic wage is rather higher, but competition for existing labour in times of skilled labour shortage is less fierce than in the south, and so over-award wages are less common. One employer in Townsville went so far as to say that labour was cheaper in the north; another said that labour costs were a little higher than in the south. At Mount Isa, they are quite a lot higher, due both to the north-western parity, and to the lead bonus.

The official annual "Labour Report" for 1959, the last one available at the time of writing, details the minimum wage by certain trades in each State.

MINIMUM WAGE BY CERTAIN TRADES AT DECEMBER 31, 1959
(Australian currency)

	Filter and Turner	Moulder (iron)
Australia (Sydney)	s. d. 379 0	s. d. 319 0*
Australia (Brisbane)	369 6	334 6*
United Kingdom (London)	246 9	250 0†
New Zealand (Auckland)	342 5	337 1*

* Per 40 hour week.

† Per 44 hour week.

(g) Industrial disputes and trade unionism

Queensland's labour force is the most highly unionised of those of any Australian State, both as regards males and females. Seventy-five per cent. of its wage and salary earners are union members, against an all-Australian proportion of 58 per cent. New South Wales has the next highest proportion of its labour force in unions, whilst the other great manufacturing State, Victoria, has the lowest proportion of all the States.

UNION MEMBERS, 1959

	Number	Proportion of total wage and salary earners who are union members		
		Males	Females	Total
		Per cent.	Per cent.	Per cent.
New South Wales	741,610	67	42	60
Victoria	461,314	58	34	51
Queensland	322,150	78	66	75
South Australia	147,093	61	30	53
Western Australia	114,497	62	36	56
Tasmania	54,136	60	37	55
AUSTRALIA	1,850,727	65	41	58

INDUSTRIAL DISPUTES, 1959

State	Number of Male age and salary earners as at June 30	Working days lost through industrial disputes	Number of working days lost per 100 male workers
New South Wales	819,000	211,352	25.8
Victoria	603,400	35,890	6.0
Queensland	287,800	90,777	31.5
South Australia	192,000	7,487	3.9
Western Australia	140,000	11,243	8.0
Tasmania	67,600	6,593	9.8
AUSTRALIA	2,127,600	365,039	17.2

The above relationships are not greatly different for earlier years; but they are largely confined to certain sectors. Coal mining, engineering and metal works, food, drink, and tobacco, and stevedoring have been the worst affected. Although one or two employers had hard things to say about trade unionism in Queensland, the vast majority of those we interviewed—including some who had had extended battle with them—had few complaints. "Tough but reasonable", "militant but fair" were typical comments. The one exception was in the case of the stevedores, who came in for universal condemnation; at least part of the reason for the accelerated installation of bulk loading facilities in the ports was to circumvent this difficulty. But this problem has by no means been confined to Queensland.

(h) Quality of labour

As stated above, employers almost without exception had a high regard for the quality of Queensland labour; many with experience of other States preferred to have Queenslanders working for them than those from further south. Some with wide experience of labour in other parts of the world as well as within Australia said that what they might lack in skill was made up for by enthusiasm and adaptability. Nor does working in the tropics seem to present a great problem: though the heat in the north obviously must have some effect both upon management and labour, much has been done in the way of air-conditioned and open-sided factories to offset this problem, and people seem to be remarkably little affected by the heat.

(i) "The Industrial Conciliation and Arbitration Act of 1961"

The picture of labour relations in Queensland may well be radically changed by this Act. Besides codifying and defining the powers and status of the Industrial Court and the Industrial Conciliation and Arbitration Commission, it

controls the registration of trade unions and associations of employers which must comply with stringent requirements before they can be registered. It also gives the Industrial Registrar substantial powers to intervene in union elections, and provides that no strike or lock-out is legal unless authorised by a secret ballot of the union or of the members of the union engaged in the project, establishment, or undertaking, in which the strike is to take place. Where there is no registered union in a dispute, the ballot is taken by the registrar. There is no doubt that the new Act is a major step forward in the control of industrial relations.

4. FUEL AND POWER

(a) Coal

Queensland has more than ample supplies of coal to meet its present needs. The following tables give the location, production and reserves of the fields which are at present worked and the qualities and prices of the coals which are mined. The Queensland Coal Board has the duty to "secure and maintain adequate supplies of coal" but is directly responsible now for the operations of only one mine. The field which has been worked most extensively is that nearest to Brisbane, West Moreton, and is responsible for over half the coal produced in the State. Considerable mechanisation has taken place and output per manshift has been substantially increased; prices are amongst the lowest in the State for deep-mined coal. Estimates of cost for a proposed 360 MW power station on the field are based on an average coal price of 45s. per ton. The quality of the coal produced is however lower than that in certain other areas, although it has recently been improved by the installation of coal washers.

It is in the Central Division that some of the most remarkable coal deposits in the world have been discovered. Although deep mines are worked in this division, it is in the fields around Callide, Kiangra and Blair Athol, all worked by open cut, that the greatest possibilities for exploitation lie. In order that the existing deep mines in the State might be more fully utilised, the distribution, and consequently production, from open-cut fields has been controlled. Output per manshift therefore, although considerably higher than in deep mines, fluctuates considerably with the intensity of working. In addition, the open-cut fields in the Central Division are all some distance away from present sources of demand. It is however on the Callide field that there is a proposal to construct a power station for commissioning in 1965. Even if a 360 MW station were constructed, it is considered reasonable to assume an average price of 15s. 8½d. per ton for coal at the mine, and although a second station would necessitate some extension of the area of the field worked and lead to higher overburden ratios, this would only increase the price of coal to an average for both stations of 20s. 1d. per ton. At Kiangra, Thiess Bros. have a contract to ship several thousand tons of coal via Gladstone to Japan. This is a lower quality coking coal for blending by the steel works in Japan. Loading facilities at Gladstone are being improved and talks have taken place between the Government, Thiess Bros. and the Mitsui Group (in Japan) regarding the construction of a 100-mile railway from the field to the port. Because of its more remote position no new developments have been announced for Blair Athol, and Blair Athol Open Cut Colliers Limited have commenced drilling for coking coals on Fraser Island, off Maryborough.

The only field now being worked in the Northern Division is that of Collinsville-Scottsville, 55 miles south-west of Bowen. Mount Isa Mines Limited own one of the underground mines and work the open-cut mine to satisfy seasonal demand. Since April, the other two underground mines have been closed (because of labour difficulties), but have recently been sold by the Department of Mines to Davis Contractors (Pty.) Limited. Collinsville normally produces some of the best coking coals in the State and has substantial reserves.

The figures given for reserves in the table are likely to prove extremely conservative. They are only for fields which are at present worked. For example, both Cooktown and Cairns have coal fields in their hinterland. The principal limitation on the working of all the fields is the extent of the demand for coal in the State. The final table sets out the pattern of the demand on the basis of weekly allocations of coal adopted by the Queensland Coal Board. Over half the coal used in the State is for electricity generation, and almost one quarter goes to the railways.

The limited extent of industrialisation, outside the Southern Division, is reflected by the pattern of usage shown in the table. In 1959-60 exports of coal overseas were 38,183 tons. There were no exports to other States, and in fact 11,965 tons were imported from New South Wales by North Queensland Gas Works, but this was only a small proportion of total usage of coal by gas works throughout the State. In the previous nine years, exports interstate have fluctuated widely and have been as high as 235,748 tons (1952-53).

The Queensland position on coal compares with that of other Australia States as follows:—

COAL RESERVES, 1958 (Million tons)

	Bituminous	Sub-bituminous	Brown
New South Wales	8,650	800	
Victoria	12		56,100
Queensland	749		
South Australia		144	230
Western Australia		274	
Tasmania	240		
Total	9,651	1,218	56,330

BLACK COAL PRODUCTION, 1958 (Thousand tons)

	Bituminous	Sub-bituminous
New South Wales	15,840	10
Victoria	108	
Queensland	2,447*	132
South Australia		755
Western Australia		870
Tasmania	276†	
Total	18,671	1,757

* Including 55 thousand tons of semi anthracite.

† Including 2 thousand tons of semi anthracite.

COAL PRODUCING AREAS OF QUEENSLAND—LOCATION AND OUTPUT

I. Southern Division (South of 24°30'S)	Location	Communications	No. of Collieries	Annual (to end June) Production			Reserves (tons)
				1957-58	1958-59	1959-60	
1. West Moreton— (a) Ipswich—Bundamba (b) North Ipswich	19-27 miles south-west of Brisbane 25-30 miles west south-west of Brisbane	Rail and Road to Brisbane Rail, Road and river to Brisbane	13 Groups, totalling 28 collieries 4 Groups, totalling 5 collieries	1,525,624	1,505,605	1,625,033	73 Million tons (Measured) 40 Million tons (Indicated) 10.5 Million tons (Measured) 1.5 Million tons (Indicated)
(c) Rosewood	30-40 miles west of Brisbane	Rail and Road to Brisbane	20 collieries				
2. Darling Downs	4 Collieries, 30 miles north-west of Toowoomba, near Acland 1 Colliery, 80 miles south of Toowoomba, at Tannymorel 1 Colliery, 280 miles north-west of Toowoomba, at Injune	Rail Rail	6 collieries	117,820	105,137	108,535	9 Million tons (Measured)
3. Maryborough— (a) Burrum (b) Selene	15-20 miles north of Maryborough 170 miles north-west of Maryborough	Road and Rail to Maryborough Rail to Maryborough	6 Collieries 1 Colliery Carried Forward ..	116,176 1,759,620	146,224 1,756,966	144,096 1,877,664	4.5 Million tons (Measured) 6 Million tons (Indicated)
II. Central Division— (21°00'S to 24°30'S)							
1. Callide	100 miles south-west of Rockhampton	Rail to Rockhampton	1 Colliery (open cut)	164,101	78,849	67,953	62.5 Million tons (Measured) 7.5 Million tons (Indicated)
2. Baralaba	90 miles south-west of Rockhampton	Rail to Rockhampton and Morgan	1 Colliery	110,350 (Combined figures—Rockhampton)	99,365	97,329	1.5 Million tons (Measured) 2 Million tons (Indicated)
3. Bluff	105 miles west of Rockhampton	Rail to Rockhampton	2 Collieries	(See 2, Baralaba)			4 Million tons (Measured) 54 Million tons (Indicated) 2.5 Million tons (Measured)
4. Styx	85 miles north of Rockhampton	Rail to Rockhampton	1 Colliery	(See 2, Baralaba)			
5. Kiangra	125 miles south of Rockhampton	Rail to Rockhampton	1 Colliery (open-cut)			37,376	2 Million tons (Measured) 200 Million tons (Indicated) 222 Million tons (Measured) 44 Million tons (Indicated)
6. Blair Athol	240 miles west of Rockhampton	Rail to Rockhampton	2 Open-cut fields	181,981	180,468	168,028	
III. Northern Division— (North of 21°00'S)							
1. Collinsville—Scottville	55 miles south-west of Bowen	Rail (port of) Bowen	3 Collieries, 1 open-cut field (seasonal)	250,898 115,725	272,791 208,950	311,433 162,354	68 Million tons (Measured) (coking coal) 40.5 Million tons (Measured) (non-coking coal)
Totals				823,065	840,423	844,473	
Brought Forward				1,759,620	1,756,966	1,877,664	
				2,582,685	2,597,389	2,722,137	

COAL PRODUCING AREAS OF QUEENSLAND—QUALITY AND PRICE OF COAL

Area	Method of Mining	Quality	Price (at Pithead)
I. Southern Division— (South of 24°30'S)			
1. West Moreton— (a) Ipswich-Bundamba	Machine mining now superseding hand contract system	Bituminous (Medium Grade) Gross B.T.U. per lb., 10,580 (air dried basis)	Shs. 58/9 per ton (Shs. 2/6 extra, for washing)
(b) North Ipswich	3 Collieries mechanised, 2 Collieries, hand contract	Bituminous (Medium/High Grade) Gross B.T.U. per lb., 11,210 (air dried basis)	Shs. 58/9 per ton (Shs. 2/6 extra, for washing)
(c) Rosewood	6 Collieries partly mechanised, 14 Collieries, hand contract	Bituminous (Low Grade) Gross B.T.U. per lb., 10,640 (air dried basis)	Shs. 64/2 per ton (Shs. 1/9 extra for washing)
2. Darling Downs	2 Collieries, partly mechanised, 2 Collieries, hand contract	Bituminous (Low Grade) Gross B.T.U. per lb., 10,740 (air dried basis)	Shs. 59/1 per ton (Acland) Shs. 71/4 per ton (Tannymorel) Shs. 68/5 per ton (Injune)
3. Maryborough— (a) Burrum (b) Selene	1 Colliery, partly mechanised, 5 Collieries, hand contract Hand contract	Bituminous (Medium Grade) Gross B.T.U. per lb., 12,900 (air dried basis) Bituminous (Low Grade) Gross B.T.U. per lb., 10,080 (air dried basis)	Shs. 79/3 per ton Shs. 65/11 per ton (Large) Shs. 64/3 per ton (Slack)
II. Central Division— (21°00'S to 24°30'S)			
1. Callide	Open-cut	Sub-bituminous, Gross B.T.U. (air dried basis)	Shs. 23/3 per ton (large coal) Shs. 21/9 per ton (slack coal)
2. Baralaba	.. .. .	Semi-anthracite Gross B.T.U. per lb., 14,290 (air dried basis)	.. .. .
3. Kiangra	Open-cut	Bituminous (Medium Grade) Gross B.T.U. per lb., 13,300 (air dried basis)	.. .. .
4. Bluff	Hand contract	Semi-bituminous Gross B.T.U. per lb., 13,370 (air dried basis)	Shs. 64/11 per ton (large coal) Shs. 62/8 per ton (slack coal)
5. Blair Athol	Open-cut	Bituminous (Low Grade) Gross B.T.U. per lb., 11,780 (air dried basis)	Shs. 30/- per ton Shs. 19/- per ton (duff coal)
6. Styx	Hand contract	Bituminous (Medium Grade) Gross B.T.U. per lb., 12,390 (air dried basis)	Shs. 88/9 per ton (large coal) Shs. 87/9 per ton (slack coal)
III. Northern Division— (North of 21°00'S)			
1. Collinsville-Scottville	Hand contract, and partly mechanised	Bituminous (High Grade) Gross B.T.U. per lb., Underground 12,970 Open-cut 11,610	Underground— Shs. 78/2 per ton (large coal) Shs. 76/8 per ton (small coal) Open-cut— Shs. 51/3 per ton (large coal) Shs. 49/9 per ton (small coal)

THE DISTRIBUTION OF COAL FROM THE VARIOUS COAL FIELDS (Weekly Figures)

	Electricity	Cement Works	Brick Pottery Works	Paper Board Works	Railways	Meat and Bacon Works	Hospitals	Sugar Refineries	Woollen Mills	Miscellaneous	Gas	Coal Works	Glass Works	Butter Factory	Smelting	Power Alcohol Distillery	Totals
I. Southern Division—																	
1. West Moreton—																	
(a) Ipswich-Bundamba	13,495	1,850	840	720	445	395	325	320	100	550	..	..	..	..	..	..	19,040
(b) North Ipswich	4,505	..	..	..	..	..	..	..	..	25	450	70	..	..	..	..	5,050
(c) Rosewood	2,855	..	60	..	2,555	345	140	..	..	185	2,245	..	250	..	..	..	8,635
2. Darling Downs	..	..	..	..	1,720	115	85	..	..	80	90	..	..	110	..	..	2,200
3. Maryborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
(d) Burrum-(e) Selene	1,000	..	..	..	850	150	..	180	..	160	435	..	..	..	..	..	2,775
II. Central Division—																	
1. Callide	140	..	..	..	60	..	..	..	..	..	..	..	..	..	..	..	200
2. Baralaba	..	..	..	..	..	..	..	..	..	..	..	..	..	..	110	..	110
3. Kinga	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. Bluff	405	..	..	..	270	..	..	..	..	..	..	..	..	..	..	..	675
5. Blair Athol	720	..	..	..	1,350	..	..	..	..	210	..	..	..	..	..	..	2,280
6. Styx	450	..	..	..	40	..	..	..	..	10	200	..	..	..	..	300	1,000
III. Northern Division—																	
1. Collinsville-Scottville†	700	200	..	..	2,000	..	..	..	..	100	..	1,000	..	..	..	..	6,400‡
Totals	24,270	2,050	900	720	9,290	1,005	550	500	100	1,320	3,420	1,070	250	110	110	300	48,365

* Export only.

† Excluding open cast operations; 1,000 per day at times.

‡ Including 2,400 tons from Collinsville-Scottville used by Mount Isa.

Some 720 thousand tons of the coal produced in New South Wales was from open cast mines, 482 thousand of that for Queensland and 16 thousand of that for Tasmania. All of South Australia's sub-bituminous coal and 91 thousand tons of that for Western Australia is from open cut. In 1957-58 Victoria produced 10,869 thousand tons of brown coal. Some 70 per cent. of this was used for electricity generation and some 15 per cent. for the production of brickettes. A Lurgi plant is now in operation producing gas which is piped 103 miles to Melbourne. Some 34 per cent. of the black coal produced in Australia was used for electricity generation in 1957-58, 19 per cent. went to coke works, 11 per cent. to the railways and 9 per cent. to gas works. Net exports overseas accounted for 836 thousand tons.

As far as Australian coal prices are concerned, those of New South Wales are, because of its dominating position, of considerable importance. In June 1958 colliery prices in New South Wales (f.o.r.) averaged £2 17s. per ton and in 1959 New South Wales steam coals could be bought at £4 per ton in Sydney, £6 5s. per ton in Melbourne and Adelaide. At the same time in Tasmania, slack coal cost £2 12s. per ton f.o.r. Fingal and nut coal £2 14s. Freight to Hobart raised these prices by £2 6s. and to Launceston raised them by £1 10s., which compared with a small coal price of £3 19s. 9d. and a large coal price of £4 13s. 5½d. f.o.b. Newcastle from New South Wales. In Western Australia, semi-bituminous coal with a moisture content of 25 per cent. and an ash content of 6·8 per cent. cost £1 5s. per ton f.o.r. at Collie and £3 12s. per ton 125 miles away at Perth.

(b) Electricity

The State Electricity Commission was established in 1938 to ensure the co-ordinated development of the production and distribution of electricity throughout the State. Since then, although the areas covered have increased in size, the number of separate undertakings producing and distributing electricity has declined. At present, over 83 per cent. of the State's population is served by electricity compared with 67 per cent. of the smaller population in 1938. The number of units generated had increased from 139,262 thousand in 1938 to 1,995,719 thousand in 1959 and units sold from 192,239 thousand (including 89,467 thousand purchased) to 1,745,721 thousand (including 96,240 thousand purchased). Average annual consumption per consumer in 1938 was 1,228 and 4,573 in 1959, and average invested capital per consumer had increased from £46 to £307. Average consumption of electricity has been increasing at roughly 10 per cent. per annum. Meanwhile the average cost per unit sold had increased from 1·62d. to 2·643d. Over the next two decades, it has been estimated that the demand for electricity in Queensland will increase as follows:—

FORECAST DEMAND FOR ELECTRICITY IN QUEENSLAND

1960	484 MW
1965	723 MW
1970	1,047 MW
1975	1,487 MW
1980	2,089 MW

There are now five regional electricity boards, which cover an area of 209,720 square miles. These are, from North to South, Cairns, Townsville, Mackay, Capricornia and Wide Bay-Burnett. To the south of the latter is the Southern Electricity Authority of Queensland, which operates in conjunction with the Brisbane City Council's undertaking and covers a further 20,100 square miles. To the west of the area boards and the authority are numerous small electricity undertakings serving the larger country centres and townships. All of these (with the exception of Dirranbandi) are administered by local authorities, and have internal combustion stations with gas and gas-cum-oil engines. In 1957-58, for the State as a whole, there were 100 generating stations employing some 1,605 workers. From time to time, power is bought from factories (particularly sugar) with their own generating facilities. The following table gives some appreciation of the variation in the size of undertakings throughout the State.

ELECTRICITY UNDERTAKINGS (1957-58)

Number of Consumers Served	Number of Undertakings	Number of Consumers	Average Cost per Unit Sold
1- 250	26	3,373	(d)
251- 500	5	2,015	10·82
501- 1,000	7	4,592	8·01
1,001- 1,500	3	3,957	6·02
1,501- 3,000	2	13,294	4·91
3,001-10,000	2	13,294	4·56
Over 10,000	6	337,817	2·51
Total	49	365,048	2·62

The area undertakings in the east of the State are, at present, of the greatest importance, as the following table shows:

	1959-60 Units Generated	Capital Expenditure Per Head, 1947-60
	('000)	£
Southern Queensland (including Wide Bay-Burnett)	1,645,500	74
Central Queensland	151,300	85
Northern Queensland	338,500	155
Total	2,135,300	

Cairns region has a population of 89,800 and (in 1959) 21,088 consumers. The Tully Falls hydro-electric station was completed two years ago and has replaced some diesel-driven units elsewhere in the area. There is at present a 3,800 kWh hydro-electric station at Barron Falls but a further and bigger hydro-electric scheme is now under construction on the Barron River and will be commissioned in 1963. The Cairns and Townsville region are inter-connected by 132,000 volt transmission lines and about 60 per cent. of the units distributed by the Townsville board come from the Tully station. The Townsville region has a population of 103,872 with 21,088 consumers in 1959. By 1963 the generating capacity available jointly for the Cairns and Townsville region will total 176 mW, and estimates of future demand indicate that further capacity will be required by 1967. One additional 15 mW set could be installed at the present thermal station at Townsville, in which case a new station would not be required until 1969. In the Mackay region (which has a population of 46,000 and 9,877 consumers), 15·25 mW of thermal capacity is in service or under construction. Further capacity would be required by 1963 but is being obviated by a connection with the Townsville Region, which will be completed by June 1962.

The three most northerly regions will thus eventually be inter-connected, and as far as the installation of new capacity is concerned the choice would seem to lie between a thermal station at Collinsville and further hydro-electric schemes. Reserves of coal and cooling water at Collinsville are adequate to cater for a 150 mW station (possible cost £7,150,000). The potential for hydro-electric power development has been estimated to be 400 mW of which some 150 mW will be utilised once the new Barron River project is completed. Possible new projects would be on the Herbert River (100 mW) and on the Burdekin River (80 mW). The latter is at the moment least likely as it would have to be combined with an irrigation project and the capital cost would be high. The capital cost of hydro-electric schemes in North Queensland as a whole is of course higher than in parts of the world where seasonal fluctuations in the flow of river water are less marked. In 1959-60, of a total cost of 0·857d. per kWh sold for the Cairns region, 0·324d. was attributed to interest charges and 0·208d. to depreciation. Nevertheless this is better than for the Townsville thermal station where the average cost per unit sent out was 1·699d., with fuel costs accounting for roughly two-thirds of this. In the Mackay region the average cost of units sold was 5·06d. Other relevant statistics for the three most northerly regions in 1959-60 were as follows:—

	Cairns Region	Townsville Power Station	Mackay Region
Units generated ('000)	230,797	62,473	37,346
Station systems load .. factor ..	44·31	22·23	43·38
(percentage)			

The Capricornia region, centred on Rockhampton, has a population of 110,000 and 22,417 users. Present capacity is 52·5 MW but further capacity will most probably be needed by 1965-66. The Wide Bay-Burnett region, centred on Howard, has a population of 108,000 with 29,513 consumers. By 1962 capacity will be 37·5 MW but by 1963 further capacity will be required. The Southern Electric Authority/Brisbane City Council Area, with a population in 1959 of 875,750 and 252,071 consumers, had 412 MW of capacity in service in 1960, with 90 MW under construction and 90 MW approved for installation (592 MW total). Completion of existing stations is expected in 1965 and further capacity will be required by the winter of 1966. All of the large stations in Central and Southern Queensland, with the exception of that at Somerset Dam in the South, are based on coal and all have to be considered together because of the possibility of inter-connection at some stage.

In 1959-60 the average cost per unit sold in the Capricornia area (Rockhampton and connected areas) was

2-92d., in the Wide Bay-Burnett area 4-07d. and for the Southern Electric Authority in 1958-59, 2-76d. Other relevant statistics for 1959-60 in these three areas are:—

	Capricornia (Rockhampton and Connected Areas)	Wide Bay Burnett	South East Queensland
Units generated ('000)	148,143	90,337	1,555,163
Station/system (percentage)	55.29	47.18	n.a.

With cheap supplies of coal available in Central Queensland the main difficulty has been to decide the size of and precise location of the next station for the area. The Blair Athol coal field is considered to be too far by existing routes from the coast (230 miles from Rockhampton by rail) to feature in development at this stage (although it is only some 120-130 miles from St. Lawrence, the nearest point on the coast), and no detailed investigation has been made of the availability of cooling water. The most likely site at present would appear to be the Callide coalfield. The capital cost of such a station would be higher than that at Rockhampton, with which it is connected by rail, or at Gladstone which might be connected by rail with the Kiangra field, but operating costs on the coalfield would be lower and fuel costs would not be subject to fluctuations due to changes in freight rates. It is further possible that developments in dry cooling might reduce the capital cost of providing cooling water at Callide and, if the station established there is relatively small, opportunities for subsequent expansion would appear to be most favourable.

CENTRAL ELECTRIC STATIONS

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Total*
Installed Capacity ('000 kW)—							
Steam	1,691	877	518	n.a.	240	n.a.	3,705
Hydro	155	237	43	n.a.	2	n.a.	933
Internal combustion	92	47	36	n.a.	57	n.a.	243
Total	1,928	1,161	597	n.a.	299	n.a.	4,881
Electricity Generated— (mn. kWh)	7,595	5,321	2,133	1,580	829	2,338	19,796

* Including South Australia and Tasmania

Hydro-electric power has increased considerably in importance and is likely to continue to do so with the further development of potential in south-east New South Wales and north-east Victoria. The two major schemes here are those of the Snowy Mountains and Kiewa. Within the next 25 years hydro-electric power is expected to be developed to the extent of 3,000 MW in this area. Hydro-electric power is already of considerable importance to Tasmania, which has been estimated to have about 50 per cent. of the total Australian hydro-electric potential.

In Queensland, electricity charges vary from one area to another, being of course a reflection of the differences in costs already quoted. These cost figures do give the clearest indication of the extent to which normal charges could be reduced to meet the requirements of special users. It must also be borne in mind that costs are dependent not only on the availability and source of power (i.e. whether coal or hydro), but also on the scale of the operations, and that, as the scale of operations increases in Queensland, the State should benefit from some of the reductions of costs which have been possible in New South Wales and Victoria. In all of the Australian States there are special tariffs, available by agreement with the electricity authority concerned, for industrial consumers, and not only tariffs but tariff structures vary from State to State. As far as quoted rates are concerned, those in Queensland compare favourably with levels in other States except Tasmania, where in 1960 the minimum quoted was 0-65d. per unit. In New South Wales for high voltage transmission it was 1-28d., where there was a guaranteed minimum consumption of 100,000 kWh per annum. In Victoria it was 2-0d. and in South Australia 2-1 to 2-35d. during the day. These can be compared with a minimum rate at present in Townsville for example of 1-25d. per unit.

(c) Gas

There are 16 gas works in Queensland, employing 359 workers in 1957-58. These are distributed as follows:—

Brisbane	Brisbane Gas Co.
.. .. .	South Brisbane Gas Co.
.. .. .	Colonial Gas Co. of Victoria
.. .. .	(two works on the outskirts)
Ipswich	Colonial Gas Co.
Warwick	Gas Supply Co. of Victoria
Bundaberg	
Rockhampton District (two works)	
Mackay	
Townsville	
Cairns	Independent of above
Toowoomba	
Charters Towers	
Maryborough District (two works)	

The question as to what size the new station should be in Central Queensland has been a difficult one. In order to take full advantage of fuel resources and supply the cheapest power for industrial use the station should be a big one, and if a larger user of power had been willing to come to the area a large station would have been constructed. Failing this however the only way of disposing of surplus power from a large station would be to construct transmission lines to the Wide Bay-Burnett area and south-east Queensland. The capital cost of such a project would however amount to approximately two-thirds of the cost of a 360 MW station either at Callide or on the West Moreton coalfield near Brisbane, so that the cost of constructing such a station at West Moreton, with transmission lines to Wide Bay-Burnett and a smaller (120 MW) station at Callide to meet Central Queensland foreseeable needs to 1970, would involve a saving of £13 million. Furthermore, greater utilisation of the West Moreton underground coalfield could secure some reductions in coal priced not only for a new station but for existing stations.

Decisions on the above matters have been and are likely to continue to be of considerable political and economic significance particularly to Central Queensland. Even if a 120 MW station only is in the near future approved for Callide, this station could be extended should the increase in industrial demand, for example the establishment of an aluminium smelting plant, require it. For an aluminium smelter of the size of that likely to be constructed in South Island, New Zealand, to handle alumina from the Weipa bauxite deposits in Queensland, power could have been supplied at a marginal cost of 0-45d. to 0-5d. per kWh from a much larger station.

For Australia as a whole, the position as regards electricity generation in 1957-58 was as follows:—

In 1957-58 these works used 200,346 tons of coal and 202,790 tons in 1956-57 which was at a value of £958,419. Some 127,472 consumers were supplied in 1957-58 with 270 million cubic feet of gas, valued at the works at £2,038 thousand and to consumers at £2,914 thousand. Between 1953-54 and 1957-58 the number of users increased only by 1,086 and usage of gas by 4 million cubic feet. In 1957-58 39,670 tons of coke (value £201,705) and 1,976,813 gallons of tar (value £62,182) were also sold.

The four gas works in Brisbane sold almost four-fifths of all the gas sold in the State (2,086 million cubic feet) in 1957-58 and of this, the Brisbane Gas Co. sold over 1,200 million. Since 1957-58 the latter's sales of gas have increased to 1,228 thousand in 1960. The company's sales of tar account for more than half those in the State. Much of it goes for road making and some goes as fuel tar for the manufacture of dry ice. Ammoniacal liquor is sold for refrigeration purposes. This and other by-products could be disposed of in Sydney if it were not for freight costs involved, and there would appear to be some scope for either increased usage of them in the Brisbane area or increased treatment which would add to their value and thus enable them to withstand freight costs more easily. Approximately half of the coke made in the works is further used for the production of water gas and the remainder sold to owners of larger premises. Both the larger gas works in Brisbane have several thousand tons of coke breeze available per year, much of which is at present exported.

Because of the high capital cost involved in relation to the anticipated level of demand, it is unlikely that gas will be produced by the Lurgi process in Queensland in the near future. The gas companies however, would appear to be very flexible in outlook. Some sell L.P.G. from Melbourne to fringe areas and oil is used for the enrichment of water gas. If natural gas were discovered at Roma in sufficient quantities to warrant the installation of a pipe line to Brisbane (350 miles at a capital cost of £15-20 thousand per mile), they might become concerned only with distribution. On the latest information obtained, three wells in the Roma-Tara district produce something less than 8 million cubic feet per day and quantities would have to be considerably in excess of this to justify a pipe line. With gas at 500 B.Th.U., South-East Queensland would only require some 10 million cubic feet to replace all the gas at present produced by the gas works. Cheap natural gas would however effect considerably the usage of all fuels. Investigations have been carried out into the usage of natural gas for electricity generation, but these have been set aside until more is known

about reserves and the likely usage of natural gas as a direct fuel.

As an indication of the level of gas costs in the Brisbane area, the tariff of the Brisbane Gas Co. can be quoted. For industrial and commercial use the highest rate is 21s. 8d. per 1,000 cubic feet when only up to 5,000 cubic feet per month is used. The rate declines by four stages for higher consumption levels until at over 300,000 cubic feet per month, the rate is 17s. 4-055d. There is a separate rate for baking and special process heating which is more favourable than the normal rate between the 100 and 200 thousand levels of usage. The above rates include a 10 per cent. allowance for cash payments.

5. WATER

In a State such as Queensland, which is predominantly concerned with primary production, and whose economy can be adversely affected by periodic droughts and floods, much emphasis has naturally been placed on irrigation and flood prevention projects. In 1958-59 however, only 155 thousand acres of agricultural land out of a total of 2.8 million acres were irrigated, yet the annual value of crops produced on irrigated land was almost £17 million compared with a total of approximately £96 million. Some 65 thousand acres under sugar cane were irrigated, 26 thousand under vegetables, 31 thousand under fodder and seven thousand under tobacco. The bulk of the irrigation schemes were privately operated. The main State schemes are as follows:—

- (a) Dawson Valley irrigation—South-west of Rockhampton—dairy cattle and cotton.
- (b) Burdekin River project—South-west of Ayr—tobacco, potatoes beans and cotton—possible link with hydro-electric schemes.
- (c) Mareeba-Dimbulah Irrigation Area—West of Cairns—Tinaroo Falls Dam—tobacco and mixed crops—system being extended.
- (d) St. George Irrigation Area—central part of Southern Queensland—for lambs.
- (e) Warrill Valley Irrigation Project—60 miles West of Brisbane—in process of completion.
- (f) Mary Valley irrigation project—South-west of Maryborough—under construction.

In addition there is the Border River Project operated with New South Wales and the Stock Route Watering Schemes. Beyond the 20 in. annual rainfall, the predominantly pastoral areas of Western Queensland are mainly dependent on artesian and sub-artesian bores. The drilling of wells and the supply of water is now controlled in order to conserve supplies. According to the last annual report of the Commissioner of Irrigation and Water Supply, approximately a dozen further possible schemes were under investigation. The main limitations on much greater expansion are availability of funds and the state of demand for primary products which would benefit from irrigation. There can be no doubt however that the possibilities for further expansion, should the need arise, are considerable.

The irrigation and flood prevention projects are of importance not only from their effect on the availability of primary products but also, like other public works, from their effect on the generation of incomes in the State and the demand for building materials and various types of equipment. As yet there has been no general clash of interest between the usage of water for irrigation and industrial purposes as is likely to become increasingly the case in certain other Australian States. In the towns along the east coast, availability of water is not a factor likely to limit development in the foreseeable future, although special provision would in most cases have to be made for any large industrial user requiring, say, one million gallons per day. There is a flood mitigation and water supply proposal for Townsville which is less well favoured for water than towns to the north and south. To the north is the highest rainfall area in Australia, where additional supplies could be obtained by the control of river and other surface water. To the south, in, for example, the Mackay and Rockhampton areas, water supplies could also be developed to meet the needs of large industrial users where necessary. In Central and Southern Queensland at various places along the coastal belt underground water is available and is, in fact, already utilised in various schemes. The Brisbane supply is adequate for present needs but further storage facilities will probably be required by 1970. Although the provision of substantially increased supplies of water for the various towns along the east coast would require increased investment, it is fair to say that this expenditure would need to be less than that required to achieve similar increases in supply to most other areas in Australia. Even in the Blair Athol coalfield (and similar comparatively isolated drier areas) water could be taken by pipe some 70 to 100 miles. In a dry continent such as Australia, distances such as this are negligible.

The cost of water for industrial purposes varies from one industrial centre of Australia to another. Thus quoted rates for various towns in New South Wales are between 3s. and 2s. 6d. per thousand gallons. In Melbourne the rate is 1s. 6d. After the first thousand gallons it is 1s. 9d.

in Perth, in Adelaide it is 2s. and in the main towns of Tasmania it is as low as 1s. Most towns in Eastern Queensland quote rates which are round about 2s. per thousand gallons, but most local authorities are willing to make special provisions and allowances for large users. Thus, various of the authorities particularly anxious to attract industry would be willing to supply water at 9d. to 1s. per thousand gallons.

6. TRANSPORT

Transport costs are extremely high in Australia as a whole, and problems of transport have had a significant effect upon the location of industry, both in the Commonwealth as a whole, and in Queensland. High transport costs by themselves would tend to favour greater decentralisation by certain sectors of industry; but the effect of this is considerably lessened in Australia by the system of tapering freights—whereby the cost per mile falls with distance carried. The decentralisation effect of high transport costs is further nullified by the Australian practice of selling goods at uniform capital city prices. By this system the transport costs of goods in outlying areas are absorbed by the manufacturer, which means that the consumers in the south are to some extent subsidising the outlying areas. The fact that it is more economical in some cases to maintain large production runs in southern factories and dispose of marginal production in Queensland rather than to manufacture in the outlying areas has had a significant effect upon a number of industries in Brisbane. The tapering freight system also means that rates over short distances are extremely high, and in this way Brisbane manufacturers can often sell as cheaply in, say, Cairns, as those in Townsville; it also reduces considerably the advantage that Brisbane manufacturers have in transport costs over those in Sydney and Melbourne when selling in the outlying parts of Queensland.

The pattern of trade, with Queensland importing a great deal more manufactured goods from the southern States than it exports to them and exporting more primary products overseas than it sends to the south, results in a considerable surplus of goods travelling north from Sydney and Melbourne over what is back-loaded. If advantage is taken of special transport contracts, Brisbane manufacturers can therefore freight to the southern centres cheaper than southern firms can ship to Brisbane, and some manufacturers do take advantage of this. But for many sectors of industry, the advantages of large-scale manufacture in main centres of population tend to outweigh this, and on the whole the system has worked against the development of industry both in Queensland as a whole in relation to the rest of Australia, and against outlying areas in Queensland in relation to Brisbane. Some of the manufacturing towns in South Queensland can offset this disadvantage vis-a-vis Brisbane by lower wage costs, but this remedy is not available to North Queensland.

Freight rates to all overseas destinations are the same from main Australian ports for all shipping companies which are members of the Australian Overseas Transport Association (AOTA). As practically all shipping companies operating from Australian ports are members of this Association, Brisbane and the other Queensland ports are at least at no disadvantage as far as freight rates are concerned in exporting either to Papua and New Guinea, or to other parts of the world. Freight equalisation for overseas destinations does, however, nullify Queensland's geographical advantage in being close to Papua and New Guinea and to certain Asian markets, and the irregularity of services from Queensland ports to some Asian destinations does in fact mean that the advantage is held by the southern ports. As far as Australia itself is concerned, the high freight rates to Asian destinations, which are usually very little different from those available from other industrialised countries of the world, also tends to nullify the country's geographical advantage in serving them with exports. Another aspect of the international freight rate problem affecting Queensland is that the wide differential between coastal shipping rates and international rates puts Queensland sales in southern markets at a disadvantage against imports from overseas; as an example of this, the timber rate from Borneo to Sydney was last year 36s. per 100 superficial feet, whilst to ship it from Cairns to Sydney cost 55s. per 100 superficial feet.

INTERSTATE CARGO SHIPPED AND DISCHARGED 1958-59 ('000 tons)

	Discharged		Shipped	
	Weight	Measurement	Weight	Measurement
New South Wales, total	5,243	236	4,003	217
Victoria, total	2,740	342	1,111	382
Queensland, total	1,097	172	610	50
of which:—				
Brisbane	788	115	35	37
Cairns	68	17	64	7
Gladstone	53	..	35	2
Mackay	52	..	35	..
Townsville	115	29	59	2
South Australia, total	2,081	115	4,294	61
Western Australia	330	175	1,725	55
Tasmania	691	245	599	273
AUSTRALIA (INCLUDING OTHERS)	12,236	1,288	12,345	1,047

Mounting costs, particularly labour costs, have in the past resulted in a serious decline in Australia's coastal shipping. In 1959 there were fewer ships engaged in interstate and intrastate shipping services than in 1955, although the tonnage (weight) carried had gone up slightly. Most of the tonnage carried—over 90 per cent.—goes "by weight", and the quantity of bulky cargo shipped on a measurement basis has been declining. Declining coastal shipping is not, of course, unique to Australia, but is of much greater significance owing to the distance between main centres.

Coastal shipping freight rates are not only based on the tapering principle but also upon the amount of traffic available. The following table gives the base rate for general cargo between the capital cities.

INTERSTATE SHIPPING FREIGHT RATES—DECEMBER 31, 1959
(Per ton weight or measurement)

	To Sydney			To Melbourne		
	Rate	Distance (n. miles)	Pence per Mile	Rate	Distance (n. miles)	Pence per Mile
Melbourne	s. d. 147 6	580	3-05	s. d. 147 6	580	3-05
Sydney	149 6	523	3-43	190 6	1,090	2-10
Brisbane	165 0	965	2-05	128 6	515	2-99
Adelaide	198 0	2,157	1-10	184 0	1,700	1-30
Fremantle	147 0	633	2-79	133 6	473	3-70
Hobart						

Freight rates to North Queensland ports are based on a complex of factors, such as distance, port facilities, handling rates, &c. While ports located close together may enjoy similar freight rates on some commodities, in the main a different scale applies to each port. But the differences between freight rates from southern ports to North Queensland ports is usually small. Thus, for some companies, the base rate for shipping from Melbourne to Townsville is 258s. per ton, whilst from Sydney to Townsville, a distance shorter by 580 nautical miles, it is 250s. The Australian National Line quotes 228s. per ton from Sydney to Townsville, and 198s. per ton from Brisbane to Townsville, a distance less by 523 nautical miles.

There are several regular shipping services for Queensland, both interstate, and intrastate. Associated Steamship Owners is an association of three shipping companies—the Adelaide Steamship Company Ltd., McIlwraith McEachern Ltd., and Huddart Parker Ltd.—which allocates cargo among the companies. At present they provide only one regular service to Brisbane, running from north-west Tasmania to Brisbane at approximately three-weekly intervals. A fourth company, James Patrick and Co. Pty. Ltd. is more loosely connected with ASO and runs a weekly return service between Melbourne and Brisbane. John Burke Ltd., an independent company, operates a service from Melbourne or Sydney to Mackay, Townsville, and Cairns, and occasionally Bowen. Trips are made every five weeks from Melbourne, and every four weeks from Sydney. In addition they operate a vessel from Brisbane to Townsville, Cairns, and Thursday Island, every three to four weeks. The Australian National Line has three vessels of 3,000 tons regularly employed in the carriage of steel from New South Wales to Brisbane and North Queensland ports (principally Townsville and Cairns). This line also has a vessel of 1,500 tons regularly employed in the carriage of fruit and general cargo between Hobart and Brisbane, and another of the same size in the New South Wales-North Queensland general cargo trade, serving principally Mackay, Townsville, and Cairns. One or two vessels of 600 tons offer an intermittent service from New South Wales carrying mainly steel and general cargo for the Queensland river ports of Maryborough, Bundaberg, and Rockhampton. The principal back-loading for these vessels is copper from Townsville or Rockhampton to Port Kembla. Howard Smith Ltd. runs a regular service from Sydney to Rockhampton every two or three weeks, and an occasional service from Melbourne to Rockhampton. Burns Philp Ltd. does not normally engage in the coastal shipping trade, being mainly concerned with services to the Australian Territories, but at present the company loads at both Sydney and Melbourne for Mackay, Townsville, and Cairns, approximately every four weeks. From the above, it will be seen that there are more regular services from southern ports to North Queensland than there are from Brisbane to North Queensland.

Steel is the most important special cargo carried. The Australian National Line carries steel from New South Wales to all ports in Australia as required; in Queensland, Australian National Line serves Brisbane, Townsville, Cairns, Rockhampton, Maryborough, Bundaberg, and Mackay. John Burke and Howard Smith also carry small quantities of steel in conjunction with general cargo. Other important special cargoes are coal, and pig iron. Coal from New South Wales to North Queensland is carried mainly by the Australian National Line. Pig iron is carried from Whyalla to Brisbane mainly in ships owned by Broken Hill Pty. Co. Ltd., the producing company, but also occasionally by the Australian National Line and Howard Smith.

MINIMUM DEPTH OF WATER AT QUEENSLAND MAIN PORTS

	Channel	Wharves
Brisbane	32 ft.	29 ft. to 30 ft.
Bowen	20 ft.	23 ft. to 26 ft.
Cairns	23 ft.	27 ft. 6 in. to 30 ft.
Gladstone	23 ft.	26 ft. to 28 ft.
Lucinda Point	17 ft.	26 ft.
Mackay	19 ft.	30 ft.
Maryborough (Urangan)	17 ft. 6 in.	29 ft.
Port Alma	23 ft.	27 ft. to 29 ft.
Rockhampton	6 ft. 6 in. to 14 ft.	12 ft. to 17 ft.
Townsville	23 ft.	28 ft. 6 in. to 30 ft.

There are five bulk-loading installations for sugar, which have 80,000 ton capacity storage sheds and can load sugar at the rate of 600 tons an hour. These are at Mourilyan Harbour, Lucinda Point, Townsville, Mackay, and Bundaberg. Lucinda Point is a small coastal harbour which in 1958-59 came fourth in the quantity of interstate net shipping tonnage handled, after Brisbane, Townsville, and Cairns. Cairns at present serves the Japanese market for sugar, where there are no bulk unloading facilities, so it has to be shipped in bags. Eventually, however, Cairns, too, will go over to bulk handling, and it is expected that some of the sugar at present handled by Lucinda Point will be diverted to Cairns. The port of Brisbane is to be deepened to take 44 ft. draught ships in its outer harbour, largely to accommodate the tankers that will be coming into the port when the Amoco refinery comes into operation.

As has been said before, Queensland has more route miles of railway track open for use than any other State, and the cost of running it in a sparsely populated State is heavy, though Queensland State railways do not run at such a great loss as those of the other less-developed States. If such items as interest, sinking fund, &c., are left out of account, the ratio of gross earnings to working expenses in Queensland in 1958-59 would be 103-69, rising to 107-54 in the following year. This compares with 93-64 in New South Wales, 119-92 in Victoria, 117-47 in South Australia, and 120-65 in Western Australia. Over Australia as a whole, the two are narrowly in balance, at 100-05. However, if interest charges are taken into account all the State railways run at a loss. The Queensland railways' deficit in 1959-60 was £6-6 million.

State government policy has ensured that a large proportion of the goods and livestock traffic goes by rail, and in Queensland 83 per cent. of gross earnings is accounted for by this class of traffic, against 67 per cent. in New South Wales, and only 58 per cent. in Victoria.

The smaller loss on the Queensland railways compared with the other less-developed States has, however, been bought at the cost of generally higher freight rates. The sample rates in the table that follows were based on those ruling in August 1960. Between then and the end of the year Queensland rates for manure, minerals, grain, special and agricultural Class A, and flour, were all raised even further. Second class merchandise may be generally defined as small manufactured goods, or goods with a high value in relation to weight and bulk: items which are freighted as second class merchandise include cigars and cigarettes, refrigerators, confectionery, biscuits, matches, footwear, ironmongery, and bottled beer. First class merchandise, freighted at a lower rate, includes bulky manufactured or semi-manufactured goods, such as agricultural implements and parts, most machinery, some categories of manufactured iron and steel, beer in bulk, butter, and cheese. Of the special and agricultural classes, Class A comprises in general agricultural produce and bulky raw materials, whilst Class B consists mainly of rather less bulky industrial raw materials. In addition to these general categories of goods, the Queensland rail tariff has special rates for manure, minerals, grain, flour, refined sugar, kerosene, motor spirit, wool, livestock, log timber, raw sugar from mills to ports or refineries, sugar cane to the mills, and fish, amongst others. The rates in the table that follow must be only regarded as a general guide; there are numerous exceptions to them, in the way of special concessions to the "outback" areas, and to meet competition from other forms of transport, to assist specific industries, and to meet other special circumstances. In each case we have taken the cheapest possible way of freighting the goods in question at tariff rates; taking advantage of reductions for bulk shipments.

The broad lines of the Queensland rail tariff were laid down to meet the traditional economic pattern of the State. Whilst the rates for some of the State's important primary products, particularly to ports for shipment, compare well with those of other States, the rates for industrial raw materials and manufactures are much higher in comparison with other States. Industry is to some extent therefore subsidising the carriage of the primary produce upon which the economy of Queensland principally rests.

COMPARISON OF RAIL FREIGHTS IN QUEENSLAND AND OTHER STATES (Over a uniform distance of 100 miles, per ton unless otherwise stated)

Commodity or class of Commodity	Queensland	New South Wales	Victoria	South Australia
	s. d.	s. d.	s. d.	s. d.
Second class merchandise ..	201 6	90 6	135 3	137 6
First class merchandise ..	116 6	120 0	108 9	99 6
Machinery ..	116 6	90 6	108 9	99 6
Manufactured iron and steel ..	116 6	111 0	98 0	92 6
Agricultural implements and parts ..	116 6	90 6	98 0	92 6
Special and agricultural Class				
A: ..	92 0	90 6	74 6	67 9
B: ..	92 0	90 6	74 6	92 6
Second-hand machinery ..	92 0	90 6	74 6	92 6
Unmanufactured iron and steel ..	92 0	90 6	74 6	51 6
Asbestos cement sheets ..	92 0	59 6	59 9	51 6
Unrefrigerated fresh meat ..	92 0	108 0	93 2	92 6
Special and agricultural Class				
A: ..	59 6	66 0	59 9	51 6
Asbestos cement pipes ..	59 6	90 0	59 9	51 6
Coke ..	59 6	40 6	47 9	43 3
Sugar cane ..	32 9	59 6	..	..
Wool (greasy) per bale ..	19 2	18 0	17 0	14 4
Maize and barley ..	59 6	49 0	40 9	35 9
Wheat ..	59 6*	49 0	42 6	35 9
Log timber ..	54 6	53 7	59 9	51 6
Cattle (per head) ..	24 5	34 10	27 6	27 11
Manure ..	31 6	33 0	22 3	19 3
Minerals† ..	43 0	59 6	47 9	43 3
Coal ..	51 8‡	40 6	47 6	43 3
Pig iron in truckloads ..	47 4	59 6	47 9	43 3
Cement in truckloads ..	59 6	59 6	59 9	51 6
Motor spirit ..	128 6	95 1	98 0	99 6

* The special rate to ports is as low as 43s. in the case of wheat.

† The mineral rate is somewhat misleading; it comprises some minor minerals but also many other odd bulk items, including wheat in bags to ports.

‡ The coal rate has been subsequently reduced in Queensland.

A considerable re-equipment and modernisation scheme has been carried out in recent years by the State Railways. In June last year there were 63 diesel-electric locomotives, and more were on order; their use combined with that of new wagons has increased the speed of the goods service, whilst greater loads can now be handled by single engines. Brisbane suburban lines are being quadrupled, and the Mount Isa-Townsville line is currently being rebuilt to take the increased output of the mine.

A report on the Queensland State Railways is currently being prepared by independent consultants.

A new State Transport Act came into effect last year, which relaxes considerably the conditions under which road transport operates in Queensland. Under the previous Act, licences were needed to run road transport over distances greater than 25 miles or to the nearest railway station. The licences that were issued were never for very long distances, and were limited in tonnage, so that the railways got the bulk of the traffic. The freights chargeable were to be not less than rail freights, so that road transport operators got used to rail classifications. Moreover, no second permits were granted over any one route, unless it could be shown that the licenced service was inadequate. The network of road hauliers was thus very small, and comparatively unimportant in the transport structure of the State. Up to 1954 there was also a system of interstate permits with New South Wales; but in that year the New South Wales government put a tax on motor transport heavy enough to discourage it. As a result of the litigation that followed, the whole question of government limitation of interstate road transport became uncertain. The courts held that the New South Wales government's action in putting the tax on interstate transport was illegal under Section 92 of the Commonwealth constitution, which guaranteed the freedom of interstate trade in the words "trade, commerce, and intercourse between the States must be absolutely free". Since then, there has been a tremendous growth in interstate road transport, and now a large proportion of the goods moving between the larger centres of population go by road. While the bulk of this transport remains between the capital cities, road movement between southern States and Queensland's provincial cities has expanded considerably. In 1956 a wool strike, with a consequent ban by the rail unions on the carriage of "black wool", led to the growth of what is known as "border hopping", transport by carriers who, whilst engaged on basically intrastate movement of goods, include a border crossing in their journey for the purpose of claiming the protection of Section 92. As this traffic tended to go to Brisbane from the interior, the effect upon the coastal towns, traditionally the destination of goods from the interior of Central and North Queensland, was disruptive. Various interstate judicial cases have established the illegality of this procedure, but some legal aspects are still in doubt.

The new Act abolished the licensing system; permits must still be obtained for services over 25 miles, but these are easily obtainable, except for certain restricted items, principally bulky raw materials and primary produce. Even in these cases, however, the restrictions are much less onerous than under the previous Act. Thus permits may be issued for cement up to 100 miles, and there are no restrictions on the carriage of wool. However, the fees payable under the new Act are based upon the load capacity of the vehicle and the mileage over which it is carried, whereas under the

previous Act they were based upon the cost of freight. It is thought by this means to discourage the carriage of bulky materials of low value by road, thus retaining the traffic for the railways. The fee is generally 3d. per ton mile on the load capacity of the vehicle, which is a fairly heavy handicap. In addition a road tax of one-third of a penny per ton mile may be imposed. Road transport may however be expected to take a growing proportion of the State's movement of manufactured goods, as it already has in the case of interstate movements. By quoting special rates the railways, it is true, have so far managed to retain a fair proportion of interstate trade, and the quoting of special rates will almost certainly increase so that the tariff rates become the exception rather than the rule. It is nevertheless the convenience, speed, and flexibility of road transport that is particularly attractive to manufacturers, and the railways will have a hard fight to keep their traffic.

One factor that continues to favour the railways, at least in the interior, is the shortage of all-weather roads. It is only since 1920, when the Main Roads Board was formed, that a serious attempt has been made to provide Queensland with good roads on a State-wide basis. Since then much progress has been made: the south-east and the Darling Downs have been provided with a good network of bitumen or concrete roads, as have various areas up the coast, and by the end of this year the coastal highway will be black-topped as far as Mossman in the far north. But the problems of distance are, of course, tremendous, and much remains to be done. An Australian Road Needs Survey for 1960-70 estimated that to improve the State Highways and Main Roads to a standard regarded as adequate would cost £192 million, improvements to Secondary and Developmental Roads would cost £17 million, and to undeclared roads would cost £80 million, a total of £289 million. Expenditure on new roads and maintenance by the Department of Main Roads is currently running at the rate of £12 to £13 million a year, plus some £6 to £7 million a year by the local authorities, making a total of some £19 million. There is some doubt as to whether expenditure can be stepped up and the pace of road development speeded towards the goals set in the Road Needs Survey.

Of the amount expended by the Main Roads Department, Commonwealth Government's funds for road development in Queensland have been contributing about £6 million a year. For the next five years this will be raised by £1 million a year for the "beef" roads that are part of the Government's plan for the transformation of the Queensland beef industry—see above. At present roads out of the western cattle areas are, with few exceptions, simply bush tracks, impassable for four or five months of the year. Both the wear and tear of the cattle road trains that are operating already, and the condition of the cattle at destination, will be vastly improved by the use of good-surfaced roads, and the Queensland Government has drawn up an ambitious plan for these, costing an estimated £20 million over ten years. The Commonwealth assistance that has been approved is far short of this total, but it is estimated that 500 miles of the proposed network—which is detailed in the map shown earlier—can be built with the £5 million allocated. A start has already been made on the 200-mile Normanton-Julia Creek road, from the Gulf of Carpentaria to the Townsville railway. Of high priority also are probably the east-west beef road from Georgetown to Mount Surprise to supply the fattening areas of the Atherton Tableland and the meatworks near Cairns, and the road linking Mount Isa with Boulia in the north of the Channel Country. The importance of the Channel Country roads is emphasised by the fact that half the funds to be expended under the Queensland Government's plan are for roads linking this area with the northern breeding and the eastern marketing areas. Channel country cattle are not easily "walked out" in the country's lush periods, and the uncertainty of the region's rainfall makes it important to move cattle in quickly during the lush periods, and out again as quickly in times of drought.

In mid-1960 there were 20,742 miles of declared roads in Queensland, of which 8,252 were State Highways, 10,460 Main Roads, 230 Developmental Roads, and 1,800 Secondary Roads. Considerable sectors of the roads are, however, under the control of local authorities, and the total of all roads in the State amounted in mid-1958 to 120,324 miles, of which only 26,478 were paved.

There are some 40,000 trucks and lorries on the Queensland register, and over 10,000 vans and utilities. The total number of motor registrations has been increasing recently at the rate of about 6 per cent. a year, of which the largest part is private cars. Commercial vehicle registrations have been increasing at about 3 per cent. a year.

7. LAND AND SOURCES OF FINANCE

(a) Land

The availability and cost of land for industrial purposes varies throughout the State, but within easy reach of all of the main centres land could be made available to suit any foreseeable industrial requirements, and all local bodies are likely to be extremely co-operative regarding the provision of the necessary services. Some indication of the likely cost of land for industrial purposes within the State can be

obtained from the following list. Quite obviously settlement prices will be subject to negotiation.

Brisbane (Feb. 1961)—

There is no zoning as in Sydney, but a new Town Plan is being prepared and the usage of land is subject to the approval of the City Council.

Inner areas—the most popular are Valley-Newstead and South Brisbane-Woolloongabba—£45,000 per acre. Intermediate areas—5-6 miles from city centre, £5,000-10,000 per acre.

Fringe areas such as Geebung-Zillmere (North Side), 8 miles from centre, £2,500-4,000 per acre.

Rocklea (South Side), 9 miles from centre—Approved industrial land £5,000-6,000 per acre. Greenbelt Area (minimum 10 acres), £1,300-2,500 per acre.

Ipswich (1960)—Near commercial centre, £1,000-1,500 per acre. Near town boundary, £20-50 per acre. Beyond the boundary, £10-15 per acre.

Toowoomba (1960)—Near commercial centre, £10,000-9,500 per acre (very little available). Near the boundary, up to £40 per acre.

Maryborough (1960)—Near commercial centre (very little available). Near the boundary, £15-25 per acre. Beyond boundary, £4-10 per acre.

Rockhampton—Near commercial centres, £8,000-9,500 per acre. Near the boundary, £150-500 per acre. Beyond boundary £15-50 per acre.

Mackay (1960)—Near commercial centre, £3,500 per acre. Near boundary, £2,500 per acre. Beyond boundary (values are lower for North Mackay), £1,200 per acre.

Townsville (1960)—Near commercial centre (small lots), £100-150 per ft. of frontage. Near boundary, £700-1,000 per acre. Beyond boundary, £100-150 per acre.

Charters Towers (1960)—Crown land—on lease at 3 per cent. of capital value of £10 per acre.

Cairns (1960)—Near commercial centre, £3,000-4,000 per acre. Near boundary, £1,000-1,550 per acre. Beyond boundary, £500-1,000 per acre.

The values of land for the above towns except Brisbane are those quoted in the Queensland Chamber of Manufactures Yearbook 1960. For other towns such as Bundaberg, Gladstone, Gympie, Ingham, Innisfail, Tully and Warwick similar values may be obtained where required. As some basis for comparison, values in other States which have been quoted are as follows:—

Sydney and Melbourne—

Despite lower availability of industrial land in Sydney than in Melbourne prices are similar.

Inner areas (3 miles radius), 20s. to 55s. per sq. ft. (£43,000-120,000 per acre).

Fringe area (3-8 miles), 8s. to 20s. per sq. ft. (£17,000-44,000 per acre).

Outer area (more than 8 miles), £4,000-8,000 per acre (with exception one block recently sold for £10,000 per acre; other blocks for £2,500-3,000 per acre).

Tasmania—Hobart, 10-15s. per sq. ft. (£21,000-33,000 per acre). Glenarney, £1,000-3,000 per acre. Budgewater, £250 per acre. Launceston, £500-750 per acre.

Western Australia—O'Connor, £500 per acre. Welshpool, £2,000 per acre. Kwinana, £250 per acre. Melville, £800 per acre.

(b) Sources of finance—

All of the larger Australian banks operate in Queensland. In June 1958 there were eight private *cheque-paying banks* with total deposits of £181 million. The largest was the National Bank of Australasia followed by the Bank of New South Wales, the Australia and New Zealand Bank, the Commercial Bank of Australia, the Commercial Banking Co. of Sydney, the E. S. & A. Bank, Brisbane Permanent Building and Banking Co. and the Bank of Adelaide. To these must be added the Commonwealth Trading Bank of Australia with deposits of £33 million. Between 1948-49 and 1957-58 the value of cheques drawn in Queensland increased steadily, from £24 million to £66 million. In June 1958 also deposits with *savings banks* in Queensland totalled £153 million. Some £132 million of these were with the Commonwealth Savings Bank and £21 million with private savings banks, which only commenced business in Queensland in January 1956. There were in total over one million separate accounts in 1958 and credit per head of population was £108. This latter compares with a credit per head of population of £166 in South Australia, £158 in Victoria, £121-7 in New South Wales, £120 in Tasmania and £93 in Western Australia.

There were 19 *life assurance organisations* operating in Queensland in 1957. During that year some 80 thousand new policies were taken out with a value of £66 million, and at the end of that year there were over one million policies in existence, against £417 million assured and annual premiums of £13 million. Approximately 43 per cent. of the policies were classed as industrial business, but only some ten per

cent. of the sum assured was of this type. As far as general insurance is concerned there were 47 Australian companies and 78 others licensed to conduct this in Queensland. In addition, there was the State Government Insurance Office which handles all of the Workers' Compensation Insurance. The 23 *friendly societies* operating in 1958 had 51 thousand members and total funds of £3-3 million, whilst the 29 *building societies* had total advances on mortgages of £9-6 million. In addition to the latter figure for advances there was over £14 million owed direct to the Queensland Housing Commission by home builders under various schemes.

The above review of the amount of business done in the State by cheque-paying banks, savings banks, insurance companies, friendly societies and building societies gives some indication of the level of the demand for and supply of funds by the public as a whole. Not all the funds made available to the various institutions will be invested in enterprises active in Queensland, however. At the same time, not all the enterprises active in Queensland receive local funds. In 1957, there were 6,293 companies with a nominal capital of £2,153 million registered in Queensland. Although 4,375 of these were incorporated in Queensland, their nominal capital was only £355 million, and over the previous ten years, 95 per cent. of the new Queensland companies registered were private. The most important group of companies registered in Queensland were in fact incorporated in other States. There were only 1,625 such companies, but their nominal capital was £1,113 million, whilst the 293 overseas companies registered had a total nominal capital of £683 million.

Of considerable importance in various parts of the State are the producers' *co-operative societies*. In 1957 there were 123 of these with over 100 thousand members and assets of £27-5 million against a total turnover of £51-7 million. Consumers' co-operative societies were by comparison small with only 26 thousand members, assets of £2-3 million and a total turnover of £4-5 million. Producer/Consumer societies of which there were two had 3,190 members, assets of £110 thousand and a turnover of £2-5 million. Also of importance, in a State such as Queensland, as a method of finance were stock mortgages, liens on primary products and bills of sale over such things as plant and machinery. In 1957-58 there were for example 1,112 liens on sugar registered, with a total value of £4-5 million. There were however also 1,611 liens on sugar where no amount was stated.

Hire purchase finance is of considerable importance in Australia as a whole as the following table shows:—

RETAIL HIRE PURCHASE AGREEMENTS FOR FINANCE COMPANIES IN AUSTRALIA—BALANCES OUTSTANDING (£ million)

	30th June, 1953	30th June, 1960	31st December, 1960
Australia	88-8	421-9	449-7
New South Wales	35-2	163-8	174-2
Victoria	20-1	118-5	121-4
Queensland	15-1	59-7	64-7
South Australia	8-5	42-9	47-2
Western Australia	6-8	25-2	29-2
Tasmania	3-1	11-8	13-1

Retail hire purchase has expanded most rapidly in Victoria and New South Wales even though in 1953 it was already of considerable importance in Queensland. For Queensland alone hire purchase business by finance companies is broken down as follows:—

RETAIL HIRE PURCHASE AGREEMENTS BY FINANCE COMPANIES IN QUEENSLAND

	1954-55	1958-59
Number of agreements—		
Motor vehicles, &c.	45,939	64,169
Plant and machinery	2,685	4,955
Household and personal goods	118,254	160,482
Value of Goods—	£ million	£ million
Motor vehicles, &c.	30-4	44-2
Plant and machinery	1-4	3-8
Household and personal goods	7-6	9-8
Amount Financed—		
Motor vehicles, &c.	17-1	26-7
Plant and machinery	0-8	2-4
Household and personal goods	5-9	7-9

In Part III. of this report a brief outline is given of government expenditure in the State and the sources of public funds. Mention must be made here however of the level of encouragement given by government to specific types of activity. The *Agricultural Bank* is concerned with assisting persons engaged in primary production under various Acts. In 1957-58 advances were made to the extent of £2-5 million, raising amounts outstanding to £10-8 million. In addition a further £4 million was outstanding under settlement, debt adjustment and drought relief Acts. The *Queensland Housing Commission*, again under various Acts, had £14-5 million outstanding to it for assistance given with housebuilding. Finally under the *Industries Assistance Acts* (1929 to 1933) the State is empowered to make advances or guarantee loans to foster and stimulate the construction of works and the development of industries, and to promote employment. In 1946, under the *Labour and Industry Act*, responsibility for carrying out matters under the earlier Acts was transferred to the *Secondary Industries Division* of the Department of Labour

and Industry. Liabilities under guarantee and advances outstanding come to £1.2 million in 1958, comprised as follows:—

	£ thousand
Manufacture of cement	206
Tin dredging	430
Cotton spinning	181
Wool scouring	84
Chain manufacture	39
Sea transport of goods	44
Earthenware pipes, brick and tile making	48
Engineering	86
Gas works	28
Miscellaneous	39

Part II.—EXPANSION AND ECONOMIC DEVELOPMENT

1. AUSTRALIA—PAST AND PROBABLE FUTURE TRENDS

The present population of Australia is just over 10 million. Natural increase of the population (excess of births over deaths) has been running at the rate of about 1.36 per cent. of the population over the past few years; net immigration has varied widely, but in any case has fallen off considerably from the peak of 152,505 in 1950. Over the past five years it has averaged just over 80,000 a year. Whilst forecasts assuming an immigration intake of one per cent. of the population a year (the official immigration target)—which arrive at the conclusion that the population will increase by 25 per cent. in the 1960's and double in about 30 years—seem rather over-optimistic, it should certainly top the 12-million mark by 1970 and be close to 14 million by 1980. These figures exclude full-blood aborigines, who in 1947 were estimated at 46,000.

The steady fall in Australia's terms of trade since the Korean boom has resulted in a much lower rate of increase in real national incomes and a stand-still in national income per head, despite the rapid increase in manufacturing that has taken place over the past decade. In the table that follows, national income is defined at Gross National Product, less depreciation and indirect taxes, plus subsidies.

NATIONAL INCOME IN TERMS OF 1957-58 MONEY VALUES

Year	£ million	Annual increase or decrease (Per cent.)	Index of National Income per head at constant prices (1948-49 = 100)
1948-49	3,757	..	100
1949-50	4,040	7	104
1950-51	4,801	19	120
1951-52	4,121	-14	101
1952-53	4,145	1	99
1953-54	4,316	4	101
1954-55	4,565	6	105
1955-56	4,725	3	105
1956-57	4,879	3	106
1957-58	4,735	-3	104
1958-59	4,903	4	105

As we have said before, the terms of trade have been largely responsible for the slow rate of increase. With small recoveries, the terms of trade have declined steadily since the Korean boom, though the volume of exports has increased greatly, to some extent offsetting this. It should not, however, be forgotten in considering the above figures, and those that follow, that 1950-51 was the height of the Korean boom in commodity prices, and Australian national income in that year rose sharply above the postwar trend-line; although it declined in subsequent years, it did not fall back to the 1949-50 level.

VOLUME OF EXPORTS AND TERMS OF TRADE (1950-51 = 100)

Year	Volume of Exports	Terms of Trade
1950-51	100	100
1951-52	95	64
1952-53	119	69
1953-54	116	69
1954-55	119	61
1955-56	132	55
1956-57	149	61
1957-58	144	51
1958-59	162	46
1959-60	166	50

The brunt of the loss of income entailed by the adverse movement of the terms of trade has fallen on the farming sector, which provides about 80 per cent. of all Australian commodity exports. Non-farm income has not been immune from the effects of the sharp decline in export earnings during the post-Korean recession, but it recovered fairly rapidly. By 1953-54 it had already exceeded the 1950-51 level, measured in constant prices, and it has risen steadily since then, even during those years when the terms of trade moved

The total amount guaranteed or advanced up until June 30, 1958, was £2.8 million, of which £625,000 guaranteed to Mount Isa Mines was the largest. This latter amount is now repaid. In addition under various Local Bodies Guarantee Acts, loans and overdrafts have been guaranteed for such projects as fruit marketing and canning, the sugar and meat industries and peanut, tobacco and ginger growing. The balance outstanding under this system in 1958 was £2 million.

against Australia. The net result has been that wage earners have improved their position, whilst farmers have been losing ground. The last few years have thus carried forward the trend operating at least since the outbreak of the war towards an even distribution of income and a predominantly middle-class society.

Manufacturing production meanwhile, has been growing since 1953-54 at a steady rate of 6.7 per cent. a year, almost exactly twice the "normal" rate of growth of farm production, and its proportion of Australia's Gross Domestic Product has been growing at the expense of farming.

VALUE OF PRODUCTION BY SECTORS AS A PERCENTAGE OF GDP

Sector	1951-52	1954-55	1955-56	1956-57	1957-58
Farming	20.1	17.7	17.2	17.8	14.5
Other primary industry	3.8	3.6	3.7	3.6	3.4
Factories	26.5	27.8	28.2	28.2	29.5

The Australia and New Zealand Bank's indices of industrial production gives a good idea of the progress of manufacturing since 1953-54, the year in which the indices were started. As progress varies considerably from sector to sector, we give it below in detail for the past three years. It will be observed that the output of the fuel and power sectors has more than doubled since 1953-54, of which that of petroleum products has increased by more than nine times, whilst production of durable goods has increased at a faster rate than that of non-durables.

ANZ BANK REVISED INDEX OF AUSTRALIAN FACTORY PRODUCTION (1953-54 = 100)

	1957-58	1958-59	1959-60	1960-61*
All groups (including power)	128	136	148	155
All groups (excluding power)	124	131	143	149
Durable goods :	129	139	155	164
Metals, machinery, and apparatus :	126	135	148	157
Basic metals	134	145	160	169
Industrial and agricultural machinery	114	122	133	143
Electrical apparatus	145	155	173	179
Transport equipment :	131	140	159	179
Motor vehicles	146	162	196	224
Other transport equipment	103	106	100	105
Building and construction materials :	111	119	125	128
Non-metallic mineral products	116	123	131	137
Structural metals	174	211	194	181
Timber and board	100	107	110	111
Building fittings	117	127	140	144
Furniture and household goods :	156	174	201	197
Furniture and furnishings	118	122	134	136
Electric household appliances	89	100	113	124
Radio, gramophone, television	469	502	666	535
Non-electric household appliances	159	209	213	242
Non-durable goods :	118	122	130	132
Textiles, clothing and footwear	107	107	118	120
Textiles :	111	103	114	112
Wool textiles	106	99	114	108
Cotton textiles	125	122	129	133
Rayon	98	76	77	86
Clothing and footwear :	106	109	120	124
Underwear, including hosiery	117	120	132	138
Footwear, including hats, gloves	93	93	105	108
Food, drink, and tobacco :	108	118	126	125
Food :	111	113	116	114
Dairy products	110	116	119	129
Cereal milling	90	96	102	105
Bakery and confectionery	110	114	119	120
Fruit and vegetables	118	104	115	86
Meat and fish	112	119	112	98
Fats and oils	123	136	130	137
Alcoholic beverages	108	107	114	122
Non-alcoholic beverages	122	122*	132	155
Tobacco	122	125	130	138
Chemicals and allied industries :	131	137	145	141
Basic chemicals and explosives	127	133	136	132
Chemical fertilisers	136	135	146	144
Paints and varnishes	126	130	138	141
Soaps	128	130	137	141
Plastic mouldings	157	178	201	173
Miscellaneous industries	141	158	171	186
Leather and leather goods	91	85	82	78
Paper	148	169	183	202
Fuel and Power :	183	190	206	229
Coal and coke	106	108	115	127
Gas	113	115	120	122
Electricity	144	154	170	180
Petroleum products	687	717	784	902

* 8 months average only

The inflation injected into the economy by the Korean War was perpetuated by lavish wage increases, which promoted the expansion of consumer demand. But once imports were restricted, this demand could no longer be satisfied by foreign goods, and domestic producers found themselves in a strong sellers' market. Industrialisation therefore continued to advance, often in disregard of costs. While in recent years the growth of manufacturing output has outstripped the increase in industrial employment, production costs in most Australian industries remain above those ruling in other industrial countries.

High costs and strong domestic demand have prevented Australia from developing sales of manufactures overseas on any scale, but domestic products have to a large degree displaced imported manufactures. This process has gone furthest in capital-intensive mass-production industries based on locally-produced steel, such as the production of motor cars and other consumer durables (see the table on page 21), where high wages and the scarcity of skilled craftsmen are no bar to progress. At the other end of the scale, in capital goods industries catering for a relatively small market, and demanding great technical skill, import replacement has not gone far. Since the payments crisis of 1951-52, on the other hand, rural efficiency has substantially increased under the influence of Government policy, which has helped to channel investment in the direction of farm production. The considerable rise in farm output has been achieved by virtually the same rural labour force as ten years ago.

The broad pattern of development during the 1960's is likely to follow that of the 1950's fairly closely, agriculture and mining catering primarily for export markets, industry for the domestic market. The rapid increase in population and in particular the advent of the post-war "bulge" on to the labour market, all of which is likely to seek employment in the non-farm sector of the economy, means that the high rate of investment of the 1950's must be maintained. Since 1952-53 gross fixed capital formation has been remarkably steady, fluctuating between 25 and 27 per cent. of the Gross National Product. Because of the need to build up the country's infrastructure, a high proportion of investment outlays has been directed to housing and public works, notably transport, fuel and power, and water supplies, but the share of private non-housing expenditure (which because it includes motor vehicle purchases for private use is slightly overstated) has generally been about 53 per cent. of total fixed investment.

GROSS INVESTMENT IN FIXED ASSETS (£ million)

	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60
Housing	228	227	216	241	264	288
Public works ..	382	411	439	468	509	563
All other	675	741	752	813	840	968
Total fixed investment	1,285	1,379	1,407	1,522	1,613	1,819
Total fixed investment as a percentage of GNP	26.1	26.0	24.5	26.1	25.8	26.8

The bulk of these outlays has been financed out of domestic resources. Personal savings are large, accounting on average for over 30 per cent. of gross domestic capital formation, except in 1957-58 when personal savings fell to an exceptionally low level and only accounted for 16 per cent. Personal savings through assurance funds have been increasing steadily; other personal savings are inclined to fluctuate widely with farm incomes.

FUNDS AVAILABLE FOR PRIVATE INVESTMENT (£ million)

	1957-58	1958-59	1959-60
Undistributed company profits	175	178	(205)
Increase in assets of marketing authorities ..	-24	8	13
Increase in assurance funds	118	128	137
Other personal savings	214	374	(354)
Allowances for depreciation	414	440	470
Public authority capital transfers	3	3	4
Deficits on balance of international payments—			
Financed by changes in international reserves ..	41	9	4
Other	133	198	239
Less Net increase in indebtedness of public authorities	-108	-134	-113
Total	1,066	1,204	1,313

Company savings, excluding depreciation but including reinvestment of undistributed profits by foreign firms, are a smaller but steady element, generally just short of £200 million. Between 1954-55 and 1958-59 foreign capital has contributed less than ten per cent. of investment finance. The net annual inflow, public as well as private, and short-term as well as long-term, averaged just under £145 million over the five years ending 1958-59, of which reinvested profits accounted for almost £35 million annually. Foreign capital has, however, been responsible for roughly half the investment made in secondary industry in recent years, and has played an important role in the development of the country's mineral resources.

There is no doubt that the investment picture is a healthy one, and suggests a continued steady growth in productivity; though, as a considerable proportion of the investment must continue to be in not immediately profitable but essential basic services and social outlays, the advance may not be great. Recent Commonwealth Government policy, with its tougher attitude to demand inflation and protection for domestic industry should ensure that investment is well directed towards raising productivity and reducing costs. All in all, it seems likely that total output could increase by three to four per cent. a year in the coming decade. The question then arises as to whether foreign exchange resources can be raised at a rate sufficient to pay for the imports that will be required by an expansion of this order, experience having shown that import requirements of a country in the process of industrialising tend to increase *pari passu* with the growth of output. The structure of trade alters, imports of finished goods being replaced by imports of raw materials and semi-finished goods, but in general, the propensity to import remains as strong as ever. Whilst restraints on demand and the use of tariffs to hold in check any undue increase in imports competitive with Australian production, combined with the fact that new industries are more likely to be based on domestically-available raw materials, should hold back import demand, it seems likely that the Australian exports in total will have a hard job to keep pace with the rise in import demand.

Dependent as it is upon world commodity markets, any forecast of Australia's export sales is extremely chancy, but it seems likely that sales of the major exports will rise considerably in the coming years, particularly beef and veal, and minerals. It may well be that under the influence of the recent government tax concessions on exports of manufactured items, these will also make rapid strides, but the continued high level of Australian costs is likely to prevent these assuming any great importance in Australia's export structure for the next ten years. Unless, therefore, exports of manufactures increase much more rapidly than seems likely, the terms of trade swing markedly in Australia's favour, or oil is discovered in sufficient quantities to replace imported supplies (imports of oil accounted for over 12 per cent. of merchandise imports) it seems probable that national income will only grow at a rate of some 2½ to 3½ per cent. a year.

More detailed consideration of future trends for various industrial sectors in Australia will be given in Part III.

2. GENERAL REVIEW OF EXPORT PROSPECTS FOR AUSTRALIA

The pattern of exports in the 1960's is not likely to change basically, though exports of manufactured goods may well become of increasing importance, particularly if the Government's attempts to hold down industrial costs meet with success. The important factor in Australia's export performance in the coming decade, then, will be world trends in demand for the commodities produced in the Commonwealth, the more important of which are also the mainstay of Queensland's economy.

Wool can only benefit from European integration. There is no danger of competition from European producers or from the overseas territories of the EEC, and anything which might raise the standard of living in Europe can only raise wool sales, unless replacement by synthetics proceeds faster than seems likely. The rest of Europe already takes more Australian wool than the United Kingdom and EEC tariffs are nil for most types of wool, and no more than 0.25 per cent. for others. Moreover Commonwealth Preference does not apply in the case of raw wool since the United Kingdom levies no duty. Demand for "wool" fabrics (including wool-synthetic mixtures) in Europe may be expected to increase almost as fast as total fibre consumption, but, because of the increasing use of mixtures, consumption of raw wool is expected to rise more slowly, at a rate of about 1.2 per cent. a year. The United Kingdom with the highest usage per head in the world, is likely to raise consumption far less than this, by not more than half per cent. a year. On the Continent, usage is likely to rise faster, partly because there is more room for it to do so, and partly because incomes are rising so much more rapidly, bringing many more consumers to the point where they may be expected to switch from cheaper fibres to the more expensive but better quality wool. The same principle applies to Japan, where wool consumption should rise by over 3 per cent. a year. In total, world wool consumption should rise in the next ten years at the rate of just under 2 per cent. a year. Forecasts of production in the main producing countries suggest that growth

in supplies will more or less match that of demand, with Australian production taking a rather larger share of the total market than in the past. There is however the possibility that new synthetic fibres will be developed, and as development costs are written off, the existing synthetics will become relatively cheaper, so that competition will become more intense in the coming years.

The prospect for the international meat market in the coming decade is one of gradual increase, coupled with the development of new markets as world living standards rise. The scope for increasing sales in countries other than Europe is particularly good in North America, Japan (where consumption should rise by over 5 per cent. a year) and possibly other Asian countries. Beef prospects are better than those for lamb and mutton, which are limited, outside the United Kingdom, by a strong consumer preference for beef, and as far as Australia is concerned, by the strength of the New Zealand industry. Existing studies suggest that the rise in demand for beef in Europe will keep ahead of local production and that imports could double over the next 10 years if consumer preferences were given full reign. Government policy is likely to favour consumption of meat that can be produced domestically, however, so that the anticipated rise in imports, although substantial, should be less than this. Argentina, Australia's chief rival in this trade, has failed to increase its export surplus, and while this situation may not last, Australia has a good chance of capturing a larger share of trade if the production of chilled beef can be stepped up. Australian exports of beef could increase by about 40 per cent. by 1970 or 4·7 per cent. a year, if supplies are of the right kind.

Britain is, in effect, the sole European importer of Australian sugar, a large proportion of which is sold at prices above those ruling in world markets under the Commonwealth Sugar Agreement. The threat of world surpluses makes sugar one of the most tightly controlled commodities in the world. Whilst the almost complete dependence of the West Indies, British Guiana, Mauritius and Fiji upon sugar make it extremely unlikely that the agreement will be abandoned, increases in Australian sales of sugar will be geared closely to the development of demand in the United Kingdom, Canada, Japan and in Australia itself; the prospects of sales in the "free" markets are negligible, due to the intense competition in them. The prospects of further sales in the United States market must be considered doubtful, due to the higher priority that Latin American countries will have in that market for political reasons. If present world production and consumption trends continue, the problem presented by world over-production will become increasingly serious. Whilst in the less-developed areas sugar consumption shows good prospects of rising owing to the greater response of consumption to increasing incomes at low levels, competition for new markets will be intense. In the more industrialised countries increases will be severely limited by the fact that most of them are reaching saturation point in the matter of sugar consumption. The amount of extra sugar that Australia will be able to sell in overseas markets is likely to be limited to as little as one or two per cent. a year, although world demand for sugar should rise at a rather faster rate.

Australian wheat exports are handicapped by the fact that Australia is in the main an exporter of soft wheat, directly competing not only with other countries producing grain of a similar quality, but with wheat produced in the importing countries themselves. The strength of Canada's position is that it exports high quality, high-protein wheat, which is often combined with domestically-produced grain of inferior quality in the importing country to satisfy consumer preferences for particular types of bread. Moreover, as incomes rise, consumers tend to switch from soft wheat bread to hard wheat bread. The prospects for exports of hard wheat are therefore much better than for soft wheat—and much of the wheat grown in Queensland is hard. As regards all bread-grains, however, individual consumption tends to decrease as incomes rise. In most European countries the growth of population will be insufficient to offset the decline in consumption per head, so that total consumption is also expected to decline. Forecasts made on the basis of the relationship between personal consumption and breadgrain consumption per head suggest that in 1970 the consumption of bread-grains will be 8 per cent. lower in Europe than the average for 1954-55 and 1956-57. The other side of the coin, however, is that in underdeveloped countries, wheat tends to replace traditional foodgrains as incomes rise. China is at present encouraging both the production and the consumption of wheat, and whilst the recent contracts for the supply of Canadian and Australian wheat, arising as they did from home agricultural failures, are not likely to be repeated on the same scale, there are distinct possibilities that this unpredictable customer will continue to buy wheat, and is already looking to rather more long-term contracts. Over the next five years, the difficulties of disposing of Australia's export surplus of soft wheat to traditional markets are likely to grow, in the face of growing self-sufficiency in certain markets, including those in Europe, and the subsidisation of American wheat and flour exports. Shortage of foreign exchange will

hinder the development of new markets in the east, but these markets still present the best possibility of sales for Australian wheat. Here again, the situation is overshadowed by large and continually growing stocks of wheat and coarse grains. Australian high-quality barley, however, should continue to be in demand due to the increasing world demand for meat, translated into demand for animal feeding-stuffs. Exports of barley to the continent of Europe may, however, fall somewhat as the E.E.C. agricultural policy takes shape. Moreover, whilst the general state of imbalance between production and consumption is more serious for wheat, the coarse grains situation is also giving rise to serious concern; world prices of coarse grains, especially barley, have been declining since March this year. To some extent, however, Australian exports of barley will be helped by their high quality.

In the existing pattern of butter trade, the United Kingdom is of paramount importance. New Zealand and Australia, which together account for about half the total world trade in butter, send there anything from 85 to 95 per cent. of their exports. The current moves towards Britain joining the Common Market are, of course, of great importance to the future of this trade; but the importance to New Zealand of the United Kingdom butter trade probably ensures that special arrangements will be made to protect it, and any concessions will almost certainly be extended to Australia as well. On the consumption side, future trends are very uncertain. So much depends upon the proportions in which butter and margarine are eaten. It is however probably safe to assume that butter consumption will rise by at least 6 per cent. in the United Kingdom between 1960 and 1970. The growth of butter production in the United Kingdom which has been particularly rapid since the war, should at least keep pace with the rate of growth of demand, but this will leave a wide margin for higher imports. The policy proposed for the Six suggests that in the long run domestic supply and demand will as nearly as possible, be brought into balance, which would eventually lead to the elimination of net exports from the area. Whilst Denmark's application to join the Six must affect this position, there seems a good chance that Australian butter will maintain its present share of the United Kingdom market, and grow with it. In the short term however, the situation is likely to become even more serious than it is at present: last year butter consumption in Western Europe failed to rise as much as production, and various other factors contributed to sharp rises in stocks and a drastic fall in London prices. Corrective measures brought into action at a national level have not so far succeeded in restoring a better balance in international markets, and the short-term prospects are for a still higher production of milk and for the continuation of the present difficulties facing butter. Whilst the development of demand for butter in Japan could expand at the rate of about 5 per cent. a year, it is unlikely to affect the situation radically in the coming ten years, due to the present low level of consumption.

For the *foodstuffs* class as a whole, then, despite a large increase in beef exports, it seems unlikely that in total they can rise by more than 13-14 per cent. between 1960 and 1970, or about 1·3 per cent. a year.

Metals should do much better. Besides experiencing a rising demand in industrial countries with a high rate of economic growth, copper is intimately connected with the spread of electrification and the development of industry in underdeveloped countries. Demand for it should therefore rise rather faster than that for other non-ferrous metals. About half the copper consumed at present goes to the electrical engineering industry. Though this market is disputed by aluminium, on price and weight grounds, copper's higher conductivity should keep this competition within bounds, and the prospects remain good. It has been estimated that United Kingdom demand will rise by 35 to 40 per cent. in the next ten years. On the continent of Europe the rise is likely to be rather more marked than this. Whilst trade in copper will remain free—the E.E.C. has fixed its external tariff at nil, and the United Kingdom imports copper duty-free from all sources—ownership of mines is the most significant factor in the pattern of international trade. It is unlikely that Australia will be able to wrest a significant share from the European-owned African mines, and must look nearer home for its main markets. In Japan, the demand for copper should rise more or less in line with G.N.P. There is a sizeable domestic output of copper, but it is estimated that imports will rise by 125 per cent. in the 20-year period 1955 to 1975, an annual rate of over 4 per cent. In the past, imports into Japan have fluctuated widely from year to year, but they should be at least 30,000 tons a year by 1980, and could well be very much greater. Future demand in other Asian countries is hard to estimate, but these should provide a growing and ready market for Australian copper.

Lead and zinc demand is likely to expand less rapidly. Lead demand in the United Kingdom is unlikely to grow much more than 10 per cent. in the coming ten years, though it could rise much faster in Europe as a whole and in America. It is estimated that Japanese demand for imported supplies will expand as home production fails to keep pace with consumption; imports could grow by as much as 100 per cent.

over the next 20 years. Quantities imported at present are however in the main small, and fluctuate widely from year to year. Lead producers undoubtedly face a difficult time, which will probably not be improved by European integration, but Australia is in a strong position as many of its principal mines—including Mount Isa—are recognised as expanding low-cost producers. The outlook for zinc is brighter, although it is thought that imports into Japan will not rise greatly, if at all, in the next 20 years. Nevertheless, growing demand in the other industrialised countries should ensure that world demand for the import of zinc expands at the rate of two to three per cent. annually in the coming ten years.

The world outlook for tin has suffered a complete change in the past year, and it is now thought that it will be in short supply for many years to come. Current high prices have already brought into operation some marginal mines—20 were opened in Malaya alone in July; and there seems no doubt that Australia could find a ready market for all the tin it can produce surplus to its own requirements in the foreseeable future. The situation as regards the tin market will be barely affected by European economic integration. This year world consumption is estimated at 170,000 tons against production of 120,000 tons, and by August the price on the London Metal Exchange had reached £952 a ton, the highest since 1952. It is estimated that by the end of next year, consumption should comfortably exceed the 181,000 tons world production record, and by 1965 should reach 225,000 tons, despite growing substitution by aluminium in the canning industry.

In the first half of this century, it was axiomatic that aluminium production and consumption doubled every ten years. Whilst this no longer holds true, and United Kingdom consumption of aluminium is expected to increase by only 80 per cent. between 1960 and 1970, aluminium will remain one of the most expansionary metals for some time to come. It is closely linked with many of the industries whose long-term demand trend is strongly upwards: transport equipment, domestic and office equipment, packaging, electrical engineering, and the production of chemical plant. As regards Europe, there are unlikely to be any opportunities for the sale of the products of the new Australasian industry, however. Besides the existing hold over the United Kingdom market exercised by the American and Canadian giants, the next ten years will see at least some progress made in the large French and Belgian West African projects which, if the huge Inga project in the Congo ever comes to fruition, could add 900,000 tons to world supplies. Even if Inga had only just begun to produce some metal in 1970, the E.E.C. and its associates would be self-sufficient. In Japan, production of aluminium from imported bauxite is likely to expand fast, at 2.5 times the growth in G.N.P. and it is estimated that imports will rise at the annual rate of 7.5 per cent. Demand in the less-developed countries, at present small, is unlikely on the face of it to expand greatly in the coming ten years, unless these countries by-pass part of the traditional metal stage and move direct to light metal consumption. All in all, international trade in aluminium is certain to expand rapidly, but with new industries developing all over the world, trends are extremely hard to foresee; despite the massive increase in world trade, it is going to be hard to establish sales from the new Australasian industry in the face of competition from Canadian and E.E.C.-African producers, even though events in West Africa may go slower than planned. Exports of alumina to the west coast of Canada and the United States of America as well as to Japan may, however, develop on a large scale. It may well be, therefore, that as far as world markets are concerned, Australasia will be an exporter of ore and alumina rather than metal.

The total value of exports in the mineral class could well increase by an annual rate of nearly 5 per cent. over the next ten years, a more rapid expansion in semi-manufactured items offsetting a slower though substantial rise in sales of lead and zinc ores and metals.

As far as *hides and skins* are concerned, European integration should make little difference to the existing pattern of trade, but world trends in consumption of leather do not augur well for Australian exports. The demand for sole leather has tended to be weak for some years owing to competition from substitutes. The maximum possible rate of increase in world demand is less than 1 per cent. a year and may well be lower.

The development of markets overseas

The total value of world trade (excluding trade among the Soviet bloc and mainland China) rose between 1950 and 1959 from \$58 billion to \$103 billion, and according to a G.A.T.T. forecast of world trade, is likely to almost double again in the coming ten years. These figures are a measure of the opportunities likely to be available in world markets. It is logical for Australia to look at the developing markets in South-East Asia for the expansion of its exports, and we propose to examine the possibilities afforded by them in more detail.

The annual rate of growth in the underdeveloped countries of the world in the 50's was higher than in the 30's or 40's; but average income per head rose from \$103 to \$122 in the period, due to the rapid growth of population. This has come to be recognised as the major challenge of the new decade. Even to achieve an average income per head of \$160 by 1969, the rate of growth of the 50's must be almost doubled. As the export income of these countries cannot possibly keep pace with the import demand created by industrialisation, this can only mean international loans, long and short, on an increasing scale, and there are signs of this happening; these include the increase in United States aid, the doubling of the capital resources of the World Bank, the 50 per cent. increase in I.M.F. quotas, the establishment of the International Development Association (I.D.A.), and the Common Market Overseas Development Fund. It must be expected, therefore, that their development will proceed rather faster than in the past. It has already been said that although import demand rises in a developing country, the pattern changes in the first stages from consumer goods to raw materials, semi-finished products and capital goods. Industrialisation has, in fact, already stimulated imports of cotton, coal, crude oil and petroleum products, gypsum, and aluminium sheets. As far as capital goods are concerned, it is unlikely that Australia can compete with the older industrialised countries; but in any case the pattern of trade in these is largely determined by the pattern of aid; the perennial shortage of foreign exchange of developing countries means that length of credit is of more importance than price, and here again Australia will be hard put to it to match the long-term credits offered by such organisations as the United States Export-Import Bank, and the various European credit agencies. Apart from Colombo Plan business, it is unlikely that Australia can increase its trade in capital goods by much, and must rely for the time being on raw materials and semi-finished goods for the hoped-for increase in trade to these countries. Eventually, of course, as industrialisation matures in these countries, the trade barriers tend to come down, and there is room for a massive increase of trade in all types of goods; but this will certainly take a long time in the case of South-East Asia.

The 1959 size of the import markets in Asian countries, and their division into classes, is set out in the table below.

IMPORTS INTO ASIAN COUNTRIES, 1959

Country	1959 Imports (\$ million)	Distribution (per cent)				
		Consumption goods		Materials chiefly for consumption goods	Materials chiefly for capital goods	Capital goods
		Food	Other			
		Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Japan	4,491	13.4	50.5	13.4	22.6	11.6
India	1,975	17.4	6.3	19.9	14.1	42.3
Singapore and Malaya	1,845	22.1	25.4	28.4	11.9	12.2
Hong Kong	866	25.0	26.9	27.2	7.4	13.5
Philippines	601	13.4	15.1	24.4	8.9	38.2
Indonesia	483	21.8	15.2	21.6	11.5	29.9
Thailand	426	8.2	33.0	12.6	9.8	36.4
Ceylon	421	39.4	20.0	10.3	8.6	21.7
Pakistan	353	19.8	12.3	11.1	18.2	38.6
South Korea	292	9.2	6.7	56.4	12.3	15.4
Formosa	231	7.1	6.4	44.4	6.2	35.9
South Vietnam	225	10.6	31.2	17.0	14.0	27.2
Burma	223	12.4	22.0	15.7	9.1	40.8
Cambodia	70	13.0	28.2	11.0	23.4	24.4
Laos	14	23.3	24.9	10.8	15.5	25.5

In South-East Asia, the increase in wealth resulting from industrialisation and other post-war trends has not been uniform, and has been concentrated largely in the hands of a small group of entrepreneurs and urban workers, due partly to the poor bargaining position of the peasant producers upon whom the countries principally depend for export

income. There is an increased demand for newsprint and books with the growth of literacy, for canned milk, drugs and medicines with the growth of health consciousness; and for films, radios, television sets, refrigerators, air conditioners, cars and petrol, with the growth of urbanisation. In the latter categories the propensity to import is strong among the

wealthier classes, and, failing satisfactory progress in exports, this propensity to import is curtailed by heavy taxation and import restrictions. Imports of capital goods have of course, risen greatly; newcomers selling capital goods in South-East Asia include Mainland China, India, U.S.S.R. and some East European countries. A great potential advantage of these countries in selling in the area is that Western capital goods are designed to save labour, and therefore to meet conditions inapplicable in the area; so far, Chinese capital goods follow the Western model, but this situation may not last indefinitely. Industrialisation has also brought a decline in textile imports from the industrialised countries (but not a decline in total textile imports), and an increase in chemical imports, whose value has doubled, and volume trebled, since 1928.

Some idea of the rapid rise in fertiliser consumption may be obtained from the following figures.

FERTILISER CONSUMPTION IN CERTAIN ASIAN COUNTRIES ('000 tons nitrogen, phosphate, potassium content)

	1934-38	1948-52	1955-57
Ceylon	13.4	37.5	58.1
India	17.7	77.8	191.0
Indonesia	21.5	17.7	33.5
Pakistan	6.0	5.1	32.8
Philippines	6.6	32.1	24.7

The demand for imports in the underdeveloped countries of Asia has been rising much more rapidly than exports. Accelerating population growth has placed increasing pressure on food supplies, which have failed to expand sufficiently, making large food imports necessary, where little, if any, were necessary before. The strain on the balance of payments of the area has been greater in recent years than in other under-developed areas. It is thought that the capacity to import, exclusive of that created by international aid, will not increase by more than 2½ per cent. a year up to 1975, due to the mediocre export prospects.

In the individual markets, *Malaya* (including Singapore) had a population of 7.7 million in 1957. This is increasing at the remarkably high rate of 3.3 per cent. a year; Singapore itself has the highest rate of population increase in Asia, 4 per cent. By 1970 the total population is expected to be 11.5 million, of which Singapore will account for 2.4 million. Singapore is embarked upon a programme of industrialisation, and will use its central trading position to expand sales of consumer goods in the neighbouring countries; tariffs or even a ban on competitive imports are likely, to protect its infant industries. Wages are four times as high as those in Hong Kong, so it is a rich market. It is however, more likely to figure as a serious competitor for the limited Asian markets in consumer goods rather than as an important market for Australian manufactures. In the Federation, industrialisation is proceeding in a haphazard manner but fairly well—goods produced so far are simple consumer goods (cotton textiles, footwear, soap, &c.) and building materials (tiles, paint, wire mesh, and insulated cables). But the bulk of the development plans—60 per cent.—are concerned with agriculture, especially rubber replanting. The prospects of raising export receipts are better than those of any other non-communist Asian country, based as they are upon rubber and tin; moreover the capacity to import will be further boosted by foreign borrowing and the inflow of capital. It is not so likely to force the pace of industrialisation as other Asian countries, and so may well be a good market for simple consumer goods, capital goods, and agricultural requirements for some years yet; but Australian industry must expect fierce competition from Japan, continental Europe, and other Asian suppliers.

Burma has a population of some 20 million. Existing industry is limited to the processing of primary produce—rice, sugar, and teak, and the production of such things as cement, matches, cotton cloth and yarn, cigarettes and pharmaceuticals. New industries include a jute mill, a brick and tile factory, and a steel rolling mill. Import licences are severely restricted. Since 1955 Burma has refused United States aid; this ban has now been revoked, and may mean greater economic progress, which is very slow—in the main sectors production is not back to prewar levels. Toyota is to assemble cars there, and there is to be a state fertiliser factory catering for a large part of the existing demand; but the existing demand is only a very small portion of the potential demand.

Thailand has made steady progress in the past decade. Between 1952 and 1958 GDP rose by about 4 per cent. annually, and by about 2 per cent. per head. As with Malaya, export prospects are better than most other Asian countries, since the country produces tin and rubber. Industries so far include rice milling, rubber factories, tanning, bags, matches, soap, soft drinks, paper, textiles, cigarettes, and cement. Imports are controlled by prohibition and licensing of competitive imports rather than by tariff, which is fiscal rather than protective. The climate for foreign investment is excellent, and car assembly, bicycle tyres and tubes, pharmaceuticals, jute, edible oil and flour are some of the industries being established by foreign firms.

South Vietnam, Laos, and Cambodia, with a population totalling some 20 million, are still war-ravaged, and are kept going by United States and French aid: in South Vietnam only 33 per cent. of imports are paid for by exports. Imports are thus mainly from the countries giving aid, and the spending is mainly on infrastructure, both repairing and building. There is little chance of a significant increase in exports to these countries unless linked with aid.

Indonesia, with a population of 87 million, is unlikely to provide a significant market for Australian exports for many years to come. The breakdown of communications and distribution means that exports of most of the commodities in which Indonesia is rich have failed to increase or even declined; though the country is a target for aid from both east and west, the problems to be overcome in this great sprawling country remain formidable, and are not helped by its attitude to foreign trade and capital. Imports are likely to remain strictly limited for many years.

The *Philippines* has a population of some 20 million. Industrialisation has proceeded farther than in most Asian countries, and manufacturing accounts for 16 per cent. of the national income. The pattern of imports has changed significantly towards capital goods and raw materials, and imports of consumer goods are held down by import controls. Machinery accounts for 15 per cent. of total imports, chemicals for 11 per cent., base metals for 10 per cent., dairy products for four per cent., transport equipment for five per cent., electrical machinery and equipment for six per cent., and metal manufactures for three per cent. Of these, about half come from the United States, and some 18 per cent. from Japan. Up to 1956 United States goods entered the Philippines duty free; this privilege is now being progressively reduced, and will disappear by 1974. There is a long-term possibility of increasing exports to the Philippines.

India's population of 438 million in 1961 is increasing at the rate of 2.5 per cent. a year. The first two plans have made some impact on industrialisation, but at the expense of the foreign payments situation, and India is faced with an acute shortage of foreign exchange. Industrialisation is promoting a rapid expansion of the urban labour force and of the middle class; but the growing urban demand for consumer goods cannot be satisfied from overseas, owing to the exchange position. Apart from the possible elimination of grain imports, the pattern of Indian imports—with capital goods and raw materials accounting for over 75 per cent. of the total—is likely to remain the same in the 1960's, but might shift towards higher imports of raw materials, fuels, and more complex types of capital equipment at the cost of simpler capital goods and certain semi-manufactures. India expects to achieve self-sufficiency in ordinary steels by the end of next year. During the 1960's it also expects to become self-sufficient in general purpose machine tools, basic chemicals (for example caustic soda), and the simpler dyestuff intermediates. It also expects to achieve a large measure of import substitution in fertilisers and drugs, and begin production of heavy electrical and mining equipment and industrial machinery, including cement-making plant and paper making machinery. The size of the import bill will continue to be largely determined by the amount of aid it gets, and once again, the origin of capital goods imports will tend to coincide with the countries granting credit or aid for their purchase.

Pakistan had a population of 87 million in 1959, increasing at the rate of 1.4 to 1.7 per cent. a year. During the 1950's the operations of the Pakistan Industrial Development Corporation combined with the rigid control of imports of manufactured goods resulted in a remarkable and sustained development of modern industry particularly textiles, cement, paper, sugar, cigarettes, tyres, and fertilisers. In 1950 modern manufacturing accounted for 1.5 per cent. of production, whilst in 1958 the equivalent percentage was 6.3. The second plan, which started this year, requires twice as much aid and investment as the first, and the stringent import regulations are unlikely to change much in the 1960's.

Ceylon's 11 million people are increasing at the high rate of 3 per cent. a year. The country has been more successful than India and Pakistan in raising national income, but this has been mainly with foodstuffs and export commodities, and industrialisation has not yet been seriously tackled. Ceylon has no coal or oil, and scanty mineral and skilled labour resources. The long-term prospects for imports of manufactured goods are on the whole quite good, though just now the foreign exchange position is bad, and competition will be severe from India, China and Japan, as well as from the U.S.S.R. and Europe.

New Zealand is, of course, another important market in considering the prospects for the development of Australian exports. It has 2 million people, increasing at the rate of 2 per cent. a year, which should reach 3 million by 1972. Domestic industrial resources are few and far between, and the industrialisation so far has had a high import content. Paper is almost the only domestic industry based on local raw materials. There is likely to be only a very moderate increase in the capacity to import over the next ten years, 2½ per cent. a year or so, and the pattern of imports is

unlikely to change much, with a concentration on producers' requirements and limited availability for finished consumer goods. In some cases more highly processed items will be replaced by ones which are less so, as oil refining, steel production from scrap, and metal fabricating develop, and the share of raw materials within the category of producers' goods may rise. But Australia has a good chance of increasing its share of New Zealand's imports at the expense of the United Kingdom, particularly for fuels and raw materials.

It is axiomatic that industrialised countries are other industrialised countries' best customers for industrial exports. As far as Australian exports of manufactured goods are concerned, however, those to Japan will be limited both by the Australian level of costs and by the fact that Australia already sells far more to Japan than it buys from it. Unless Australia is willing to admit a far higher proportion of Japanese manufactures, it is unlikely that exports in this class can increase significantly. Sales to Europe will be severely limited by distance and the protective nature of the Common Market. There could well be a chance of increasing Australian sales of manufactures to the United States, but novelty is likely to be a significant selling point here, and this is the kind of thing about which it is difficult to forecast. It has already been suggested that Australia's exports to these principal industrialised areas of the world are likely to

continue to be mainly in raw materials, foodstuffs and fuels. The United Nations Economic Commissions for Europe and for Asia and the Far East have made an estimate of the future levels of demand in these areas for these classes of goods. They are based on the following assumptions regarding growth of the domestic product between 1955 and 1975: the United States projection assumes that the Gross National Product will increase by approximately 80 per cent.; the European projections are based on two alternative assumptions, first that Gross National Product will increase by 60 per cent., and the second by 100 per cent.; and the Japanese projection assumes a rise of 130 per cent. in Gross National Product, implying a doubling of income per head in the twenty years. Though the Japanese projection seems high it is not unattainable, and may be even higher. These projections do not pretend to forecast the actual level of imports in the three areas concerned of each commodity mentioned. The base metals predictions, in particular, should be treated with reserve. But they may be taken as a useful guide to future trends based on those now discernible. These projections show clearly that the volume of imports of agricultural products will in general increase much more slowly than those of minerals, especially fuels. In this respect it will be noted that coal imports into Japan are expected to rise more than fivefold.

PROJECTIONS OF IMPORTS OF FOODSTUFFS, RAW MATERIALS, AND FUELS INTO WESTERN EUROPE, NORTH AMERICA, AND JAPAN, FOR 1975 (Current value in \$ million and index numbers of volume, 1954-56 = 100)

Commodity	Western Europe <i>a</i>			North America <i>b</i>		Japan	
	Value fob average 1954-56	Volume Index		Value fob average 1954-56	Volume index 1975	Value cif average 1954-56	Volume index 1975
		1975 (1)	1975 (2)				
Foodstuffs	6,650	110	130	3,390	150	769	153
Meat and livestock	500	100	155	140	170	1	265
Dairy products	340	100	100	30	..	4	..
Fish	80	100	100	140	170	..	..
Breadgrain	740	80	100	..	..	406c	130
Coarse grain	560	100	120	..	..	26	265
Fruit and vegetables	670	100	145	280	170	16	170
Sugar	360	110	130	530	110	123	175
Beverages	200	100	100	130	170	1	..
Tobacco	400	125	150	90	140	10	130
Feeding stuffs	210	100	120	20	..	5	..
Oilseeds	590	100	100	60	..	126	..
Vegetable fats and oils	350	145	155	90	150	9	175
Animal fats and oils	110	80	80	10	..	22	..
Raw materials of agricultural origin	3,340	125	140	1,170	155	842	189
Hides, skins and leather	330	115	120	140	130	26	120
Wool	1,140	135	150	310	170	198	200
Cotton	1,050	105	110	60	120	432	185
Wood and cork	380	..	..	60	..	66	..
Minerals and Metals <i>d</i>	1,820	195	250	1,340	200	272	285
Crude minerals (including fertilisers)	180	145	165	140	170	94	200
Iron ore	110	550	900	110	350	98	400
Non-ferrous ores and scrap	420	120	125	440	150	45	275
Copper	750	165	210	310	200	10	225
Lead	90	170	210	70	230	4	200
Zinc	40	250	300	20	200	1	..
Tin	30	120	125	150	160	13	130
Aluminium	120	400	500	20	250	1	425
Coal	400	170	170	..	..	70	570
Crude petroleum	1,560	140	250	860	..	169	475
Petroleum products	520	..	..	390	200	84	250
TOTAL, FUELS, RAW MATERIALS AND FOODSTUFFS	14,290	130	170	7,150	170	2,206	218

a OEEC countries (excluding Switzerland).

b Excluding trade between the United States and Canada.

c Including rice.

d Excluding iron and steel, iron and steel scrap, and precious metals and ores.

3. QUEENSLAND—PATTERN OF INCOME, CONSUMPTION, PRODUCTION AND TRADE

(a) Personal income

From 1949-50 until 1959-60 total personal income in Australia increased by approximately 135 per cent., whilst that for Queensland alone increased by 125 per cent. This has meant that over the period Queensland's proportion of the Australian total personal income has tended to decline.

STATE PERCENTAGES OF AUSTRALIAN TOTAL PERSONAL INCOMES

	1949-50	1952-53	1955-56	1958-59	1959-60
Queensland	13.3	13.3	12.9	13.1	12.8
New South Wales	39.9	39.4	39.1	39.2	39.7
Victoria	28.6	28.2	29.0	29.1	29.4
South Australia .. .. .	..	..	..	..	..
Northern Territory)	8.8	9.2	9.1	9.2	8.8
Western Australia	6.6	6.9	6.7	6.4	6.3
Tasmania	2.8	3.0	3.2	3.0	3.0

There have however been fluctuations from year to year and the lowest proportion for Queensland was in fact reached in 1951-52 (12.5 per cent.). In 1949-50 Queensland had 14.0 per cent. of incomes derived from farms, unincorporated business and property in Australia. In 1956-57 this proportion had risen to 14.5 per cent., but declined to 13.8 in 1959-60. The proportion of incomes from wages and salaries was 12.7 per cent. in 1949-50, at its highest in

1952-53 (12.8) and at its lowest in 1959-60 at 12.1. These fluctuations were not offset entirely by income from cash social service benefits, of which Queensland had 14.5 per cent. in 1949-50 and 14.9 per cent. in 1959-60. It is of interest to note that during this period, when Victoria increased its share of total Australian personal incomes, all of the three main categories of personal income benefited. Between 1958-59 and 1959-60 total personal income in New South Wales increased by 10.1 per cent., in Victoria by 10.0 per cent., Tasmania 8.8, Western Australia 7.8, Queensland 6.1 and South Australia (including Northern Territory) by 4.9 per cent.

TOTAL PERSONAL INCOME PER HEAD OF POPULATION (£)

	1948-49	1955-56	1958-59
Queensland	222	403	441
New South Wales	249	465	497
Victoria	259	479	499
South Australia .. .. .	..	..	..
Northern Territory)	255	453	465
Western Australia	241	421	434
Tasmania	195	420	431
AUSTRALIA	246	454	480

The figures in the above table are given in the Queensland Year Book (1959). They show that some of the differences in growth of total personal income are due to differences in the rate of growth of population in the various States. Although total personal income per head in Queens-

land has been persistently below average for that of Australia as a whole, between 1948-49 and 1958-59 it rose at a slightly faster rate than average. Once again there were fluctuations in the rate of increase from one year to another, and on the latest information available it would appear that between 1958-59 and 1959-60, total personal income per head rose by only 4.5 per cent. in Queensland as against 6.6 per cent. for the whole country. The rate of increase was even lower in South Australia where drought reduced farm incomes by some 38 per cent.

The fluctuations in total personal incomes in the various States are in fact due almost entirely to fluctuations in farm incomes so that those States which are predominantly agricultural and pastoral experience greater fluctuations than the rest. As the following table shows, farm income is of greater significance in Queensland than in any other State, although (over the three years 1954-55 to 1956-57) New South Wales had 32.4 per cent. of Australian net farm income, Victoria 27.0 per cent. and Queensland 18.8 per cent.

FARM INCOME AS PERCENTAGE OF STATE PERSONAL INCOME (Average over 3 years, 1954-55 to 1956-57)

Gross value of Farm output	Australia	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania
Wheat	2.6	1.6	2.2	1.5	5.3	9.6	0.1
Other Agricultural products	5.9	3.0	4.9	12.3	9.5	6.6	12.1
Wool and Sheep	11.0	11.8	8.5	11.3	13.4	15.6	7.4
Cattle (Including dairy cows)	2.9	1.8	2.6	7.6	2.3	2.0	2.2
Dairy products	4.3	3.0	5.6	6.1	3.3	3.0	5.5
Other	1.3	1.4	1.7	0.5	1.1	1.0	1.4
Total	28.0	22.6	25.5	39.3	34.9	37.8	28.7
Costs—							
Wages and Salaries	2.7	2.3	1.6	5.6	2.7	3.6	3.4
Fuel	1.0	0.7	0.9	1.6	1.4	1.7	1.4
Marketing	2.7	2.4	2.5	3.1	3.3	4.1	2.9
Depreciation	2.8	1.9	2.4	4.1	4.1	4.8	2.1
Indirect taxes	0.7	0.6	0.6	0.9	0.7	0.7	0.5
Other	6.4	5.0	6.6	7.7	7.7	9.6	8.2
Total	16.3	12.9	14.6	23.0	19.9	24.5	18.3
Net Income	11.7	9.7	10.9	16.3	15.0	13.3	10.4
Less company income	-0.5	-0.6	-0.1	-0.6	-1.0	-0.8	-0.2
Income of unincorporated business	11.2	9.1	10.8	15.7	14.0	12.5	10.2
Less increase in assets of marketing authorities	+0.1	+0.1	+0.1	..	-0.1	+0.1	+0.1
Cash income of unincorporated business	11.3	9.2	10.9	15.7	13.9	12.6	10.3

Between 1954-55 and 1956-57 net farm income in Australia averaged some £494 million. Since then it has fallen to as low as £347 million and then risen to £481 million.

The following tables give an indication of the source and disposal of total personal income in the various States.

ORIGIN AND DISPOSAL OF PERSONAL INCOME BY STATE (Average, three years, 1954-55 to 1956-57)

	Percentages of State Personal Income						Per caput Income (£)					
	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania
Income—												
Wages, salaries and supplements	65.0	63.0	59.8	59.6	61.1	63.5	300.6	295.3	246.1	272.2	249.1	257.2
Net income of unincorporated business	21.4	22.8	28.0	26.0	24.7	22.5	99.0	106.9	115.2	118.8	100.8	91.1
Rent, interest and dividends	7.2	8.5	5.2	8.2	7.1	6.6	33.3	39.8	21.4	37.5	28.9	26.7
Cash social service benefits	6.4	5.7	7.0	6.2	7.1	7.4	29.6	26.7	28.8	28.3	28.9	30.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	462.5	468.7	411.5	456.8	407.7	405.0
Outlay—												
Consumer exp.	77.5	74.5	75.4	71.7	82.8	78.9	358.5	349.2	310.3	327.5	337.6	319.5
Interest	0.7	0.6	0.7	0.6	0.8	0.8	3.2	2.8	2.9	2.8	3.3	3.3
Taxes on income	21.8	24.9	23.9	27.7	16.4	20.3	100.8	116.7	98.3	126.5	66.8	82.2
Personal savings												
Total	100.0	100.0	100.0	100.0	100.0	100.0	462.5	468.7	411.5	456.8	407.7	405.0

It can be seen that wages, &c., in Queensland account for a smaller proportion of total personal incomes than in any other State except South Australia, and that the proportion of rent, interest and dividends is also smaller. Wages, &c., and rent, interest and dividends per head were also lower than elsewhere. Consumer expenditure per head was lower than in other States. Since Queensland is so dependent on farming however, it is possible that a fair proportion of goods consumed do not enter into income and expenditure compilations.

(b) Consumer expenditure

Between 1954-55 and 1956-57 consumer expenditure in Queensland averaged some £425 million, compared with a total for Australia of £3,215 million. The following table sets out the main categories of expenditure and compares the position in Queensland with that of other States. With a lower level of personal income for head than in other States, except Western Australia at that time, it is to be expected that the pattern of expenditure should vary. Queensland had in fact a lower level of consumer expenditure for head than any other State, since in Western Australia a higher proportion of personal income was spent by consumers. There were also differences between the more industrialised States and those largely dependent on farming.

The relative importance of the main items of consumer expenditure given in the table may be summarised as follows:—

ANALYSIS OF CONSUMERS' EXPENDITURE (Per cent.)

	Queensland	Australia
	Per cent.	Per cent.
Food, tobacco and alcohol	29.5	28.8
Consumer durable goods (household)	5.7	5.9
Clothing, chemist and other goods	14.3	14.4
Fuel, power and rent	7.1	8.4
Recreation, motoring, oil and other travel	10.2	10.1
Other items	8.6	8.5

A larger proportion of consumer expenditure in Queensland is on food, tobacco and alcohol than in other parts of Australia. This is more than offset by the lower proportion spent on fuel, power and rent. The relative importance of expenditure on consumer durable goods, other than cars, is less than elsewhere in Australia. This proportion should of course increase as incomes in the State increase, and electrification is extended in rural areas. It should however be noted that already in 1958 there were 226 radio licences per 1,000 population in the State compared with an average for Australia of 217. There were then 14 national and 20 commercial radio stations throughout the State serving 320,626

licensees (15 per cent. of the Australian total). In the second half of 1959, two commercial and one national television stations were started in Brisbane. At present 83 per cent. of the State's population is served by electricity, and in 1958 there were 181,985 telephone lines connected (1954: 140,473). Vehicle registrations have increased as follows:—

VEHICLES REGISTERED IN QUEENSLAND

	Cars	Motor Cycles	(Buses)
1949	80,833	16,171	(917)
1958	206,260*	20,193	(1,236)

NEW REGISTRATIONS			
1949	8,256	3,176	(131)
1958	20,430	1,710	(126)

* Including 2,292 taxi cabs

The next table sets out the pattern of retail sales in Australia and Queensland in 1956-57. It should be borne in mind that at that time, Queensland had some 14.3 per cent. of the Australian population.

RETAIL SALES IN AUSTRALIA AND QUEENSLAND, 1956-57

	Total Australia £'000	Queensland £'000	Queensland percentage of total
Groceries	346,103	53,769	15.5
Meat	171,359	21,442	12.5
Fruit	76,997	9,690	12.6
Bread	73,384	9,453	12.9
Confectionery	85,666	10,056	11.7
Other food	48,515	6,455	13.3
Beer	239,645	31,842	13.3
Tobacco	101,127	13,188	13.1
Men's clothing	118,285	15,297	12.9
Women's clothing	181,867	20,324	11.2
Drapery	82,541	13,677	16.6
Men's footwear	21,490	2,552	11.9
Women's footwear	38,152	4,494	11.8
Builders' hardware	86,170	11,554	13.4
Domestic hardware	60,086	8,185	13.6
Business machines and equipment	19,359	2,184	17.3
Radios, radio-grams, television sets	35,458	3,178	9.0
Musical instruments, records, &c.	9,758	1,382	14.1
Domestic refrigerators	28,530	4,935	17.3
Other electrical goods	40,354	6,256	15.5
Furniture	62,802	8,153	13.0
Floor-coverings	30,530	2,787	9.1
Newspapers, books	69,744	8,715	12.5
Chemists goods	77,382	10,489	13.6
Sporting and travel	14,580	1,806	12.4
Jewellery	27,788	3,452	12.4
Grain	57,736	9,171	15.9
Other goods	58,818	7,998	13.6
Total (excluding motor vehicles)	2,264,227	302,484	13.4
Tractors	34,991	9,612	16.4
New vehicles	244,025	36,566	15.0
Used vehicles	156,079	25,173	16.1
Vehicle parts	78,525	12,793	16.3
Petrol, oil, &c.	123,149	15,288	12.4
Total vehicles, &c.	636,769	99,492	15.6
Total all commodities	2,900,996	401,976	13.9

With a lower level of consumer expenditure per head in Queensland there was again a lower percentage of retail sales. When sales of motor vehicles are excluded the difference is particularly marked. When they are included, total retail sales came to some 13.9 per cent. of the Australian figure. Sales of groceries, drapery, business machines, domestic refrigerators, other electrical goods, grain and motor vehicles were all above average.

Some 28 per cent. of all retail sales in Queensland took place in Brisbane, with 14.2 per cent. in the metropolitan area around it. For the State as a whole the distribution was as follows:—

AREA DISTRIBUTION OF TOTAL RETAIL SALES

	Per cent.
City of Brisbane	27.8
Metropolitan area	14.2
Moreton	11.1
Maryborough	8.0
Downs	10.1
Roma and Western	2.6
Rockhampton	5.7
Central and Far Western	2.0
Mackay	3.4
Townsville	5.7
Cairns	7.1
Peninsula and North-Western	2.3

The items for which sales were particularly concentrated in the City of Brisbane were men's and women's clothing, drapery, footwear, business machines, consumer durable goods (except floor coverings), sporting and travel goods, jewellery and new vehicles; all substantial and largely non-regular items of purchase.

(c) Government revenue and expenditure

The tables on page 29 give the main sources of the Queensland State Government's revenue and the main items of its expenditure 1957-58. The bulk of taxation is collected by the Commonwealth Government. The main categories of Commonwealth revenue and expenditure are given in Appendix A on "Taxation and Tariffs" which includes brief comment on the Australian system of taxation, tax inducements and the tariff system.

The main category of Queensland expenditure is on the State railways. This however is almost entirely offset by earnings. Other important items of expenditure are Public Health and Recreation, Education, Roads and Bridges and "other development". Over the ten years 1948-49 to 1957-58 expenditure on public hospitals increased from £3.6 to £11.9 million. To the latter figure must be added £1.7 million which was expenditure from loans. Between 1949 and 1958 government expenditure on State schools increased from £3.8 to £13.7 millions and on the University of Queensland from £22.6 thousand to £1.1 million. Expenditure from the Main Roads Fund on road construction was £6.6 million in 1951-58 and on road maintenance was £2.6 million. In 1953-54 the comparable levels of expenditure were £2.9 and £1.6 million respectively. The Main Roads Fund is however responsible for only a proportion of the total expenditure on roads in the State.

CONSUMER EXPENDITURE (Average Over Three Years, 1954-55 to 1956-57)

	Per Caput Expenditure (£'s)						Percentage of Total Personal Income Spent						
	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Australia
Food	95.1	93.5	88.2	83.5	91.9	83.8	20.6	20.0	21.4	18.2	22.5	20.6	20.4
Tobacco and cigarettes	13.0	12.5	10.5	11.6	12.6	12.1	2.8	2.7	2.6	2.5	3.1	3.0	2.7
Beer, wines and spirits	28.4	23.9	22.9	24.6	26.0	23.7	6.1	5.1	5.5	5.4	6.4	5.8	5.7
Clothing, drapery and footwear	48.5	47.3	40.3	50.2	40.8	46.4	10.5	10.1	9.7	11.0	10.0	11.4	10.3
Chemist goods	8.1	7.2	6.8	6.8	6.2	5.9	1.8	1.5	1.7	1.5	1.5	1.5	1.5
Durables—electric and radio	11.6	11.8	11.5	10.7	11.2	10.0	2.5	2.5	2.8	2.4	2.8	2.5	2.5
hardware	5.2	5.4	4.7	5.5	5.9	4.7	1.1	1.2	1.1	1.2	1.5	1.2	1.2
furniture	9.7	10.8	7.3	11.2	9.2	9.4	2.1	2.3	1.8	2.5	2.2	2.3	2.2
coverings	11.8	11.8	11.7	9.7	13.2	9.7	2.6	2.5	2.9	2.1	3.2	2.4	2.6
Other goods	10.2	11.0	7.1	9.2	6.4	10.3	2.2	1.7	2.0	1.6	2.5	2.1	2.1
Fuel and power	29.7	27.8	22.2	27.3	34.5	28.3	6.4	5.9	5.4	6.0	8.5	7.0	6.3
Rent													
Recreation and entertainment (including newspapers)	18.0	17.8	14.3	13.2	15.2	14.0	3.9	3.8	3.5	2.9	3.7	3.5	3.7
Motoring	13.9	14.2	14.8	17.5	16.0	15.0	3.0	3.0	3.6	3.8	3.9	3.7	3.3
Rail	4.8	4.0	2.3	1.9	1.8	0.6	1.0	0.9	0.6	0.4	0.4	0.2	0.8
Other travel	10.7	10.5	10.2	8.5	9.5	9.7	2.3	2.2	2.5	1.9	2.3	2.4	2.3
Life insurance	2.1	2.4	2.0	2.2	1.9	1.9	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Domestic and other services	24.0	23.2	22.1	21.8	22.5	23.1	5.3	4.9	5.3	4.8	5.5	5.7	5.1
Postal services	2.5	2.6	2.3	2.5	2.1	1.9	0.5	0.6	0.6	0.5	0.5	0.5	0.5
Medical	8.1	7.8	6.6	6.7	6.5	6.5	1.8	1.7	1.6	1.5	1.9	1.6	1.7
Education	2.0	2.6	1.5	1.8	2.2	1.6	0.4	0.6	0.4	0.4	0.5	0.4	0.5
Expenditure overseas	1.1	1.1	1.0	1.1	1.0	0.9	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Total	358.5	349.2	310.3	327.5	337.6	319.5	77.5	34.5	75.4	71.7	82.8	78.9	76.2

QUEENSLAND STATE GOVERNMENT REVENUE, 1957-58

Receipts	(1) Consolidated revenue fund	(2) Trust funds	(3) Total
	£	£	£
Taxation—			
Income (Commonwealth)			
Reimbursement	25,921,161		25,921,161
Motor	1,014,884	4,947,932	5,962,816
Other	9,862,191	1,543,700	11,405,891
Business undertakings—			
Railways	33,934,914		33,934,914
Other	4,619,385	14,905,114	14,905,114
Land Revenue		1,210,002	5,829,387
Interest on loans and public			
balances	1,247,433	1,627,295	2,874,728
Commonwealth payments ..	6,311,520	11,778,585	17,490,105
Other	3,545,760	25,588,448	29,134,208
Net Total Receipts	86,457,248	61,001,076	147,458,324
Gross Total Receipts	87,955,575	63,677,499	151,633,074

NOTE.—(i) In Australian states certain receipts and expenditure are handled through Trust Funds, not under Consolidated Revenue. These are shown in column (2).
(ii) Income tax is collected by the Commonwealth Government and redistributed to the various states on an agreed formula.
(iii) Net totals exclude, and gross totals include, transfers between funds.
(iv) "Other taxation" includes probate, succession and other stamp duties (£6.4 million), land tax (£1.5 million), liquor taxes (£0.9 million), lottery tax and racing taxes.
(v) Land revenue includes rents (£2.7 million) and receipts from forestry.
(vi) Commonwealth payments include contributions to interest on debt (£1.1 million), special financial assistance (£4.9 million) and grants for special purposes.

QUEENSLAND STATE GOVERNMENT EXPENDITURE, 1957-58

Expenditure	Consolidated revenue fund	Trust funds	Total
	£	£	£
General administration	8,936,621	2,258,947	11,195,568
Education	12,548,542	633,327	13,181,869
Public health and Recreation ..	9,702,694	5,651,442	15,354,136
Social amelioration	1,902,567	381,110	2,283,677
Business undertakings—			
Railways	35,756,906	130,667	35,887,573
Other		11,035,816	11,035,816
Roads and Bridges		12,619,084	12,619,084
Land settlement	660,492	5,435,914	6,096,406
Forestry	348,850	1,137,235	1,486,085
Agriculture	1,051,512	1,768,252	2,819,764
Irrigation	632,255	2,398,821	3,031,076
Other development	1,665,245	8,162,939	9,828,184
Debt charges	13,443,800	2,351,761	15,795,561
Other	557,362	5,283,936	5,841,298
Net Total Expenditure	87,206,846	59,249,251	146,456,097
Gross Total Expenditure	89,469,883	61,160,964	150,630,847

NOTE.—The apparent discrepancies between the totals of the Trust Funds of this table, and those of the preceding and succeeding tables are accounted for by various transactions with local authorities and with the Commonwealth government.

In addition to expenditure from the Consolidated Revenue Fund and from Trust Funds, there is of course expenditure from loans. In 1957-58, net expenditure from the State Loan Fund was £20 million. The largest items were as follows:—

NET EXPENDITURE FROM STATE LOAN FUND, 1957-58 (£ million)

		Aggregate net expenditure up to 1957-58
Railways	4.5	89.7
Public buildings	3.6	33.3
Roads and bridges	0.7	9.0
Forestry	1.4	14.7
Water supply	2.2	23.4
Agricultural Bank	0.8	7.8
Queensland Housing Commission ..	1.5	11.3
Loans to local banks	6.6	33.9
Subsidies to local bodies	3.8	27.6
Other items	0.7	64.7
Total	20.0	315.4

STATE LOAN BORROWING

	Total Raisings		Domestic Raisings		Public Loans		Commonwealth Loans	
	£ million	Per cent.	£ million	Per cent.	£ million	Per cent.	£ million	Per cent.
1959-60—								
New South Wales	58.1	32			47.0	32	11.1	37
Victoria	46.4	27	0.3	6	37.5	25	8.6	28
Queensland	22.7	12	4.1	82	18.4	12	0.2	1
South Australia	25.4	14			20.5	14	4.8	16
Western Australia	17.7	10	neg.	neg.	14.3	10	3.4	11
Tasmania	13.5	7	0.6	12	10.9	7	2.0	7
Total	183.8	100	5.0	100	148.7	100	30.1	100
Total for 5 years—								
New South Wales	266.1	32			201.6	32	64.4	34
Victoria	211.8	25	2.1	12	160.4	25	49.3	26
Queensland	102.2	12	11.5	66	75.5	12	15.1	8
South Australia	118.3	14	neg.	neg.	89.5	14	28.8	16
Western Australia	80.1	10	1.1	6	59.5	10	19.5	10
Tasmania	63.0	7	2.9	16	46.9	7	13.2	7
Total	841.5	100	17.6	100	633.4	100	190.5	100

PRINCIPAL TRUST FUNDS, QUEENSLAND, 1957-58

Fund	Receipts	Expenditure	Balance 30th June, 1958
	£	£	£
Aboriginal Welfare	160,825	165,881	34,700
Agricultural Bank	3,770,232	3,558,230	997,364
Barrier Fences	100,481	142,692	64,609
Buffalo Fly Control	34,441	29,115	30,649
Burdekin River Authority	134,567	65,646	135,827
Commonwealth Aid Local Authority			
Roads	1,250,000	1,278,399	333,110
Commonwealth State Housing ..	4,445,098	4,057,738	375,440
Co-ordinator General of Public			
Works Construction	535,013	492,820	134,709
Dairy Cattle Improvement	70,397	72,910	15,464
Electricity	160,881	364,020	32,218
Electricity	184,535	169,761	46,853
Federal Aid Rehabilitation	19,599		688,517
Fish Supply	1,196,972	1,267,871	194,221
Forestry and Lumbering	1,077,932	1,077,932	
Hamilton Lands Development ..	26,693	17,876	88,868
Harbour Dues	1,412,902	1,390,362	97,504
Hospital Benefits	192,000	190,540	24,009
Hospital, Motherhood, and Child			
Welfare			
Irrigation and Water Supply Con-			
struction	2,318,500	2,333,173	2,205
Irvinebank State Treatment Works ..	63,553	27,222	6,378
Land Act Improvement	114,222	107,424	60,470
Life Assurance Co. Acts Cash			
Deposits			35,350
Liquor Acts	50,125	17,371	397,593
Main Roads	12,706,817	12,052,552	654,676
Main Roads Burdekin Bridge ..	98,874	86,498	27,501
Police Superannuation	424,364	253,814	885,201
Police Superannuation			65,672
Post-war Reconstruction	469,180	299,119	1,810,021
Public Service Superannuation ..	543,260	219,917	6,034,007
Queensland Housing Commission ..	3,290,720	2,752,090	440,393
Sickness, Medical and Funeral			
Benefits	61,168	31,968	409,499
State Coal Mines	1,258,706	709,810	224,420
State Coke Works	351,058	294,144	50,118
State Enterprises	5,244		11,754
State Insurance	10,649,646	7,512,261	31,420,495
State Stores Board	462,118	403,023	492,497
Stock	557,361	519,254	133,487
Stock Diseases Compensation	65,522	59,880	97,904
Stock Routes and Pests Destruction			25,728
Sugar Cane Prices	121,173	161,998	87,809
Supreme Court	20,224	21,390	42,011
Tourist Bureau	1,349,481	1,365,909	119,662
Tully Falls Hydro-electric Project ..	2,531,277	2,483,384	155,244
Unemployment Insurance		1,600	2,693,989
Workers' Homes	41,865	259,405	183,915
Other	5,568,790	5,254,474	4,842,273
Total	59,765,800(1)	53,878,885(2)	33,921,423(3)

¹ Excluding repayments of advances to Local Authorities £855,590.

² Excluding advances to Local Authorities and other investments £4,226,650.

³ Cash £9,747,565 and securities £44,178,858.

After various adjustments to the aggregate net expenditure of £315.4 million above, the net Public Debt came to £285.9 million, 83 per cent. of which was held in Australia and 15 per cent. in London. This did not include an amount of £28.7 million owed to the Commonwealth under the State Housing Agreement.

Expenditures other than on business undertakings, by local authorities came to £20.9 million in 1957-58. Over half the funds needed for this were derived from rates and £3.0 million was derived from sanitary, sewerage and cleansing charges. The main items of expenditure were on roads (£6.0 million), debt service (£3.9 million) and health, cleansing and sewerage (£2.4 million). The main business undertakings run by local authorities were concerned with electricity (expenditure £8.4 million), waterworks (£5.7 million), and transport (£4.2 million). Total receipts of local authority business undertakings from revenue and loans were £19.2 million and total expenditure was £18.5 million. In addition to the above, there are various semi-government bodies in the State concerned with specific projects and activities. These include the regional electricity boards, seven harbour boards, various water and irrigation authorities and other organisations concerned with hospitals, the university, fire brigades, and industry improvements. Total receipts of these bodies came to £45.3 million in 1956-57, of which £25.3 million was attributable to the various marketing boards.

It can be seen from the above that the activities of the State Government, local authorities and semi-governmental bodies are of considerable importance to the Queensland economy. In 1956-57 gross expenditure (from loans and revenue), by these organisations came to £260 million. Some £166 million of this was by the State Government, £51 million was by the semi-governmental bodies and the remainder by local authorities.

(d) Queensland's pattern of trade

Details of imports and exports relevant to the major industrial sectors in Queensland are given in Appendix A. The overall pattern of trade between Queensland and other States on the one hand, and overseas countries on the other, is given in the following table. The basically triangular pattern of Queensland's trade is immediately apparent. Imports consist largely of manufactured goods from other States and exports are of raw materials and foodstuffs, predominantly overseas. Even so, imports of certain raw materials and foodstuffs from other States in Australia play an important part in the Queensland economy. Thus there were quite substantial movements of live animals, greasy wool, "other vegetable substances" and non-ferrous metals into Queensland, and interstate imports of animal and vegetable foodstuffs, spirituous and alcoholic liquors and "other" tobacco totalled some £39 million in 1957-58. To this must be added interstate imports of iron and steel products, which came to some £17 million in 1957-58, so that imports of various raw materials, foodstuffs and iron and steel products accounted for at least 30 per cent. of all imports from other States.

PRINCIPAL RAW MATERIALS* IMPORTED INTO QUEENSLAND (OTHER THAN FOODSTUFFS), 1957-58 (£'000)

	Total	From Overseas
Tobacco unmanufactured	543	28
Live animals	3,515	2
	(cattle 1,812)	
Wool greasy	4,388	120
Wool scoured	414	
Animal substances not food	165	15
Seeds, all kinds and oil nuts		
Other vegetable substances	1,643	521
Yarns (all kinds)		
Vegetable oils	647	124
Oils, fats and waxes (n.e.i.)	758	101
Rocks, minerals and hydrocarbons	1,598	722
Non-ferrous metals	1,410	46
Rubber manufactures	1,041	924
Logs	336	319
Timber undressed and dressed	450	269
	17,754	3,406
Foodstuffs*—		
Animal	4,430	1,041
Vegetable	17,614	2,243
Spirituous and Alcoholic liquors	2,395	113
Other tobacco	7,745	30
	49,938	6,833
Iron and steel products*	19,591	2,287
	69,529	9,120

* Including some semi manufactured goods, but not including some raw materials (e.g. pulp) which are only given in miscellaneous items.

OVERALL PATTERN OF TRADE IN QUEENSLAND, 1957-58 (£ million)

	Interstate			Overseas			Overall balance
	Imports	Exports	Balance	Imports	Exports	Balance	
Foodstuffs—animal	3.4	7.2	3.8	1.0	26.7	25.7	29.5
vegetable	15.4	34.8	19.4	2.2	36.7	34.5	53.9
Spirituous and alcoholic liquors	2.3	0.1	-2.2	0.1		-0.1	-2.3
Tobacco	8.2	3.6	-4.6	0.1			-4.6
Live animals	3.5	9.4	5.9		0.5	0.5	6.4
Animal substances not foodstuffs	4.8	1.8	-3.0	0.1	69.6	66.5	66.5
Vegetable substances and fibres	1.5	0.6	-0.9	0.5	0.3	-0.2	-1.1
Yarns and manufactured fibres	1.3	0.5	-0.8	1.5		-1.5	-2.3
Textiles	9.7	2.0	-7.7	4.9		-4.9	-12.6
Apparel	17.8	2.9	-14.7	0.4	0.1	-0.3	-15.0
Oils, fats and waxes	10.9	2.3	-8.6	4.0	1.8	-2.2	-10.8
Pigments, paint and varnish	2.1	0.1	-2.0	0.2	0.1	-0.1	-2.1
Rocks, mineral and hydrocarbons	1.0	1.0	0.7	6.3		5.6	5.6
Metals and metal manufacturing	46.5	13.2	-33.3	9.7	11.3	1.6	-31.7
Dynamo and electric machines	9.8	1.0	-8.8	2.2	0.1	-2.1	-10.9
Machines and machinery	18.7	2.4	-16.3	9.6	0.6	-9.0	-25.3
Rubber and rubber manufacturing	5.7	3.1	-2.6	1.3		-1.5	-1.4
Leather and leather manufacturing	0.4	0.9	0.5		0.4	0.4	0.9
Wood and wickers	0.5	5.2	4.7	0.8	0.2	-0.6	4.1
Earthenware, cement, china, &c.	1.7	0.2	-1.5	1.0	0.1	-0.9	-2.4
Pulp, paper and board	3.0	0.3	-2.7	2.4		-2.4	-5.3
Paper manufacture and stationery	2.7	0.4	-2.3	0.9		-0.9	-3.2
Sporting material, toys, &c.	2.6	0.2	-2.4	0.5		-0.5	-2.9
Optical, surgical and scientific instruments	1.5	0.1	-1.4	0.4		-0.4	-1.8
Chemicals, medicinal products, &c.	15.8	1.3	-14.5	2.1	0.1	-2.0	-16.5
Miscellaneous	5.8	1.4	-4.4	2.6	1.3	-1.3	-5.7
Totals	196.5	96.1	-100.4	49.5	156.5	107.0	6.6

Imports of the above raw materials from overseas came to only £9 million in 1957-58, and represented only 18 per cent. of all imports from overseas. An important exception to the general pattern was however imports of unmanufactured rubber. Of the remaining 82 per cent. of imports, those of machines and machinery, and pulp, paper and board are of greatest significance when compared with interstate imports.

Because they form such a large group (although normally included under the broad category of metals and metal manufactures) and because they give a good indication of the relative importance of certain types of manufacturing activity in the State, imports of iron and steel products are given in detail. There is no manufacture of iron and steel or re-rolling of billets in Queensland. The importance of imports of tinplate from overseas for the manufacture of cans should be noted, although it is possible that supplies of this material also will come increasingly from other States. A very large proportion of imports of iron and steel from other States in 1957-58 would appear to be for fencing, roofing and structural work in general.

Queensland accounted for only 6.3 per cent. of Australian imports but for over 19 per cent. of her exports.
1957-58 (£ million)

	Imports		Per cent.	Exports		Per cent.
	Australia	Queensland		Australia	Queensland	
Foodstuffs, alcohol and tobacco	52.6	3.4	6.5	227.7	63.5	28.0
Animal and vegetable substances	24.3	0.6	2.5	403.5	70.4	17.4
Yarns, textiles and apparel	108.5	6.8	6.4	28.1	6.3	22.4
Rocks, minerals and	101.7	4.0	4.1	22.8	1.8	7.9
Oils, fats and waxes	282.4	21.5	7.6	81.6	12.0	14.7
Metals and metal manufacturing	45.1	3.3	7.3			
Paper, &c.	37.6	2.1	5.6			
Chemicals, &c.						
	642.6	41.7	6.5	706.4	154.1	21.8
	out of 789.3	out of 49.5		out of 810.3	out of 156.5	

IMPORTS OF IRON AND STEEL PRODUCTS BY QUEENSLAND 1957-58 (£'000)

	Interstate	Overseas	Total
Pig iron	195		195
Rails	491	1	492
Bar, rod, hoops and strips	2,230	232	2,462
Structural sections	645	63	708
Plate and sheet—galvanised and zinc anneal	3,213		3,213
Plate and sheet—tinned and terne	780	1,423	2,203
Plate and sheet—other	2,474	272	2,746
Pipes and tubes	1,746	99	1,845
Spun cast-iron pipes		396	396
Wire ropes	470		470
Fencing wire and barbed wire	1,276	10	1,286
Wire netting	877	59	936
Fence posts	626	68	694
Other	1,785	40	1,825
Total	17,304	2,287	19,591
1956-57	14,735	5,033	17,768

To complete the overall picture, the main categories of imports and exports for Australia as a whole are given in the next table.

AUSTRALIAN IMPORTS/EXPORTS, 1957-58 AND 1958-59 (£ million)

	Imports		Exports		Balance	
	1957-58	1958-59	1957-58	1958-59	1957-58	1958-59
Foodstuffs of animal origin	8.4	7.8	92.0	146.6	83.6	136.8
Foodstuffs of vegetable origin .. .	26.6	27.8				
Alcoholic liquors	2.1	2.3	1.9	2.1	-0.2	-0.2
Tobacco	15.5	14.5	0.7	0.5	-14.8	-14.0
Live animals	0.7	0.6	1.8	1.2	1.1	0.6
Animal substances not foodstuffs ..	4.2	3.9	400.6	327.2	396.4	323.3
Vegetable substances and fibres .. .	19.4	19.8	1.1	1.0	-18.3	-18.8
Yarns and manufactured fibres .. .						
Textiles	108.5	97.0	2.7	2.4	-105.8	-94.6
Apparel						
Oils, fats and waxes	101.7	104.5	22.8	22.6	-78.9	-81.9
Pigments, paint and varnish .. .	7.6	6.8	0.9	0.9	-6.7	-5.9
Rocks, minerals and hydro carbons ..	7.3	7.2	28.1	21.1	20.8	13.9
Metals and metal manufacturing .. .						
Dynamo and electrical machinery ..	282.4	292.9	81.6	81.6	-200.8	-211.3
Machines and machinery						
Rubber and rubber manufacturing ..	7.4	17.7	4.4	4.6	-13.0	-13.1
Leather and leather manufacturing ..						
Wood and wicker	16.7	15.5	4.5	4.3	-12.2	-11.2
Earthenware, cement, skin, &c. .. .	13.3	14.4	1.1	1.0	-12.1	-13.4
Pulp, paper and board	45.1	48.2	3.0	2.7	-42.1	-45.5
Paper manufacturing and stationery ..	8.5	8.7	0.7	0.9	-7.8	-7.8
Sporting material, toys, &c. .. .	12.1	12.3	1.6	1.8	-19.3	-10.5
Optical, surgical and scientific instruments ..	37.6	39.8	6.5	7.5	-31.1	-32.3
Chemicals, medicinal products .. .	54.1	52.7	21.0	21.0	-33.1	-31.7
Miscellaneous						
Total	794.3	794.3	817.3	806.8	21.0	12.5

The above products have been selected because of their importance in Australian import-export statistics. The Queensland position appears as an exaggeration of the Australian position and in fact corresponds very closely to that of Australia before the last war. It must be true that some of the goods imported into other States find their way into Queensland, perhaps in a modified form, but it is also true that the more industrially advanced a country is (and the whole of Australia compared with Queensland alone is more industrially advanced) the more complex its import-export pattern is. For example, it is only industrially advanced countries which have need of some of the more complex intermediate products such as special steels, plastics and other chemicals and can indulge in some of the more advanced forms of specialisation.

(e) Population and building construction

In the 1933 Census Queensland has some 14.2 per cent. of the Australian population of 6.63 million. At the times of the subsequent censuses in 1947 and 1954, when the Australian population was 7.58 and 8.99 million respectively, Queensland's shares were 14.4 and 14.6 per cent. The estimated population in Queensland as at the 31st December, 1959, however was 1,447,198 which amounted to only 14.3 per cent. of the Australian total at that time.

MEAN POPULATION IN QUEENSLAND, 1956-1960

Year ended 31st December	Metropolitan	State	Natural Increase	Net Migration
1956	525,730	1,336,496	20,223	8,040
1957	540,158	1,392,384	22,084	396
1958	553,405	1,414,362	22,417	974
1959	565,466	1,437,230	23,250	-870
1960	576,375	1,458,430	22,843	-3,162

During the years covered by the above table, the number of births increased from 32,409 in 1956 to 35,213 in 1960. (In 1959 however they were 35,599.) Marriages increased from 9,934 to 10,227, again with a peak in 1959 (10,581). Deaths fluctuated between 11,455 and 12,370.

ESTIMATED AND PROJECTED POPULATION OF QUEENSLAND
(Exclusive of migration subsequent to 30th June, 1955)

	1960	30th June, 1965	1970	1975
Under 15 A	455,398	483,734	524,757	578,371
or		469,557	467,140	452,262
B	452,009	485,667	519,433	554,953
15-64 Men	395,396	429,320	462,486	510,733
15-59 Women				
Persons over working age	149,687	163,017	179,543	182,341
Total A	1,452,490	1,561,738	1,684,219	1,826,398
B		1,547,561	1,626,602	1,700,289

In the above table based on information prepared by the Bureau of Census and Statistics, Brisbane, two estimates are given for the "under 15 years" group. Basis A is taken on fertility rates obtained from the years 1957 and 1958. Basis B incorporates fertility rates as for A up until 1960, thereafter they diminish uniformly to the 1939 fertility rates in the period 1970 to 1975. Whatever the fertility rate, excluding migration, the population of working age should increase from approximately 847 thousand in 1960 to 1,066 thousand by 1975. The numbers of those who have to be

supported by this working population should increase from 605 thousand to either 634 thousand or 761 thousand. Even if the higher rate is achieved this would not entail any proportionate increase in the supported population. As far as migration is concerned, there has recently been a loss of population by Queensland. If this trend were reversed and a net immigration rate of 10,000 persons per annum subsequent to 30th June, 1955, were achieved, this would mean a net addition to the population quoted above of 240 to 253 thousand persons by 1975.

Trends in population have of course a direct effect upon the demand for houses. In Queensland, as in other relatively high income communities, there has furthermore recently been a decline in the age at which marriage occurs. In 1949 the average age for men was 28.85 years, for women 25.31. By 1958 these averages had fallen to 27.98 and 24.56 respectively, and seem likely to decline further. Associated with the latter trend is the general rise in incomes, which in turn has been reflected in an increase in owner-occupied houses as opposed to rented accommodation. In an effort to meet the backlog of demand existing immediately after the war, the needs of immigrants and the higher level of demand derived from the above factors, State and Federal assistance towards housebuilding has been given, both outside and through normal institutional channels. The various local bodies have also been concerned, particularly with the provision of services and facilities. Certain of them have been more successful than others, since some have had to deal with bigger increases in population or with more widely dispersed areas. Thus the area of the City of Brisbane is considerable, and the number of houses which have yet to be connected to mains sewerage, for example, is still very large, whereas in other parts of the State there are some more compact communities which have been more successful in tackling this problem.

The year 1952 was a peak year for housebuilding in Queensland—11,486 dwellings were constructed. Just over three thousand of these were Government sponsored. The total number of dwellings completed declined until 1956, when it was 7,398 of which 2,224 were Government sponsored. By 1958 it had improved to 8,104 but the number of Government sponsored dwellings was only 2,080. These fluctuations are reflected in the picture for Australia as a whole. The new housing boom which started in Australia in 1958-59 however was not so buoyant in Queensland. The number of new dwellings started had improved in Queensland, but unlike the position for the rest of Australia, it was still below the 1951-52 level. The Commonwealth economic policy has since dampened down the boom throughout Australia.

The following table illustrates the extent to which new buildings other than for dwellings has increased in importance in Queensland over the years. This again is similar to the position in Australia as a whole.

VALUE OF COMPLETED BUILDING OPERATIONS IN QUEENSLAND
(£ million)

	1954	1955	1956	1957	1958
New dwellings	17.8	18.9	18.0	20.4	21.8
Other new buildings	8.1	12.0	13.4	18.0	19.5
Additions, alterations and repairs	5.6	6.2	6.2	6.2	6.8
	31.5	37.2	37.9	44.7	48.2

Since 1958, the housing boom in Australia has been paralleled by a boom in property development as a whole associated with rapid rises in land values in certain areas. Much of the steam has now gone from this also. Although Queensland participated in this boom, particularly in the Gold Coast development south of Brisbane, new building as a whole in Queensland did not keep pace in value with that of areas further south. Thus in 1951-52 the value of all new buildings commenced in Australia was some £244 million of which Queensland had £27 million. By 1959-60 the value had increased to some £524 million in Australia but was lagging at £50 million for Queensland.

Much of the increase in building values has arisen, as one would expect, from increases in costs. Thus the average cost for 100 square feet of floor area for brick built dwellings in Queensland was £159 in 1949 and £280 in 1958. For wood dwellings the figures were £116 and £246 respectively and for fibro-cement £110 and £226. Immediately after the war, considerable quantities of building materials were imported into Australia, reaching a peak in 1951-52. Since then Australian production has expanded to meet most of home requirements, except for some North American timber and European glass. This switch may have been responsible for some of the increase in costs, but even the cost of imported goods would probably have risen and both direct labour costs and land values in Australia have been strong contributory factors.

4. THE PRESENT STRUCTURE OF SECONDARY INDUSTRY IN QUEENSLAND

(a) The relative importance of secondary industry in the State

Over the last few years Queensland has been responsible for some 12 to 13 per cent. of the net value of production of Australia as a whole. Its proportion of primary production has, however, been much higher, at 18 to 19 per cent., whilst that of manufacturing has been correspondingly lower at 8 to 9 per cent. Due to the fact that manufacturing activity has increased more rapidly in certain other parts of Australia than in Queensland, moreover, the proportion of total production shows some decline. The following table shows certain marked differences between the nature of manufacturing activity in Queensland and the more industrially advanced of the other States. Queensland has been placed third in the table because it came third to New South Wales and Victoria in number of establishments, number of male workers, and values of machinery and plant, land and buildings, output and production (i.e., output less value of materials). South Australia, however, had a higher wages bill in total.

In 1957-58, the value of plant and machinery per worker in Queensland was higher than in Victoria and South Australia. That of land and buildings per worker was, however, lower than in any other State. Again, the value of output per worker in Queensland was higher than in Victoria and South Australia, but the value of production (i.e., output less cost of materials, etc.) was lower than anywhere else. The lower level of production per head in Queensland was reflected in the lower level of earnings per worker. In Western Australia and Tasmania, where the amount of capital used per worker was much higher than in Queensland, production per worker had to be much higher to give an adequate return. Earnings per worker in Western Australia, however, were not much higher than in Queensland, whilst those in Tasmania were considerably so.

Both New South Wales and Victoria, compared with the other States in Australia, have not only a larger but a more

diversified industrial structure. In the less densely populated States industry concerned with the initial processing of raw materials plays a dominant role, but even amongst these latter States there are differences depending upon the particular types of processing industries which have been set up. Thus some processing industries, such as certain of those which have been set up in Tasmania, tend to be not only large users of power but to be extremely capital-intensive. Some, concerned with the treatment of farm produce, are seasonal, which means that capital is not as extensively used throughout the year as it is in other sections of industry. Others have only recently been set up or modernised and capital costs tend to be higher.

In Queensland itself, the following changes in manufacturing activity as a whole are recorded:—

CHANGES IN MANUFACTURING IN QUEENSLAND, 1951-52 TO 1957-58

—	1951-52	1957-58	Increase
Number of establishments ..	4,858	5,452	Per cent. 12.2
Workers (Average during period each factory was operating) ..	94,024	100,743	7.14
Salaries and wages (£1,000) ..	50,833	77,118	51.70
Plant and machinery (£1,000) ..	33,034	69,518	110.44
Land and buildings (£1,000) ..	26,393	54,499	106.50
Output (£1,000) ..	242,608	391,663	61.43
Production (Output less value of goods consumed) (£1,000) ..	89,305	137,782	54.30

In 1956-57, the numbers of establishments and of workers employed were higher (at 5,465 and 101,934 respectively) than in 1957-58. In 1957-58 "production" by factories was equivalent to 72 per cent. of the net value of primary production.

The value of "production" increased most markedly in the Metropolitan (i.e., Brisbane) area over the six-year period compared with the rest of the State, and is now well ahead. The value of output however increased more rapidly in the rest of the State, reflecting the increased value of materials handled. The position in 1957-58 was as follows:—

—	Metropolitan Area	Rest of State
Establishments ..	2,016	3,436
Workers ..	53,236	47,507
Salaries and Wages (£1,000) ..	40,776	36,382
Machinery and plant (£1,000) ..	21,775	47,743
Land and Buildings (£1,000) ..	29,782	24,717
Output (£1,000) ..	188,937	202,726
Production (£1,000) ..	75,279	62,503

Just as there are differences between the nature and structure of industry between other States and Queensland, so there are similar differences between the metropolitan area and the rest of the State. The metropolitan area had fewer establishments, but their average size was such that the total work force was larger than elsewhere in the State. The value of machinery and plant was lower since the processing industries elsewhere in the State were markedly seasonal. The value of land and building was higher because land values are higher in and around Brisbane. The value of "output" less that of materials consumed ("production") was higher because industry around a large centre tends to be more complex. The value of "output" was lower however because of the greater quantities of materials handled for initial processing in other parts of the State. In spite of these differences, however, salaries and wages per worker were much the same. The Brisbane area tends to employ more females, seasonal workers elsewhere are paid sufficiently high

WORKERS PER ESTABLISHMENT, PERCENTAGE OF FEMALES EMPLOYED AND VARIOUS VALUES PER WORKER FOR AUSTRALIAN STATES, 1957-58

—	Average number of workers per establishment	Percentage of female to total labour	Salaries and wages per worker	Machinery and plant per worker	Land and buildings per worker	Output per worker	Production (Output less materials consumed per worker)
	Numbers 19.8		£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
New South Wales ..	21.6	24.73	887 2 0	761 2 0	711 14 0	4,078 16 0	1,653 8 0
Victoria ..	18.3	27.71	865 14 0	665 12 0	735 16 0	3,810 16 0	1,560 12 0
Queensland ..	22.0	16.98	772 2 0	696 2 0	545 12 0	3,921 6 0	1,379 8 0
South Australia ..	12.3	18.20	860 8 0	618 16 0	587 10 0	3,541 18 0	1,420 0 0
Western Australia ..	16.9	13.56	776 4 0	966 2 0	717 2 0	3,985 16 0	1,517 16 0
Tasmania ..		17.92	898 6 0	1,146 12 0	909 6 0	3,946 12 0	1,732 2 0

NOTE.—Numbers of workers are averages for whole year. Establishments are those employing four or more workers.

wages to offset some of the disadvantages of seasonal occupations and parity allowances are paid outside the South East.

Manufacturing industry is not only concentrated in Brisbane but in the South as opposed to the Central and Northern areas of the State. Thus the non-metropolitan area of South Queensland had in 1957-58 more establishments and workers than the rest of the State outside Brisbane. (Its wages bill was about the same, but the value of its "output and production" was lower). In the South the main manufacturing centres outside Brisbane are Ipswich, Toowoomba, Bundaberg, Maryborough, Warwick and Gympie, in that order, when measured by value of output and production. Maryborough, however, had more workers than Bundaberg in 1957-58 and Gympie had more than Warwick. In Central Queensland the main centre is Rockhampton with a level of manufacturing activity similar to that of Toowoomba. In the North the three main centres are, Townsville, Cairns and Mackay, but the factory statistics show that manufacturing activity is by no means limited to these centres and spread over surrounding areas as well. Thus, although for example, the township of Townsville in 1957-58 had more manufacturing activity than that of Cairns, the position was reversed when the surrounding areas of each were included in the comparison. As one moves away from the metropolitan area the value of output in relation to that of production increases considerably. In 1957-58 in Brisbane it was 2.5:1, for the South as a whole 2.7:1, for Central Queensland 3.1:1 and for Northern Queensland almost 5:1. In the North Western statistical division it was over 10:1.

The Queensland official statistics divides factories into three types. Those concerned with the processing of raw materials, those which are sheltered because from the nature of the product they must be near markets and those which are competitive:—

	1957-58	
	Workers	Production (£1,000)
Processing	29,317	44,824
Sheltered	33,081	38,265
Competitive	38,345	54,693

This distinction must, of course, be somewhat arbitrary and the classification of various sectors of industry as belonging to one or another group must vary over time. Nevertheless the classification is of interest for comparisons within the State. Thus in 1957-58 Brisbane had 75 per cent. of the workers in "competitive" industry, 48 per cent. of those in sheltered and 30 per cent. of those in "processing". In 1947-48 the corresponding percentages were 78, 46 and 29. Although this reflects but little change in itself, a continuation of this trend is in the right direction for the State as a whole so long as such percentages do not merely reflect a decline in competitive industry in Brisbane. Fortunately competitive production did increase in Cairns, Townsville, Maryborough and Moreton in the ten years up until 1957-58 at a rate in excess of that for Brisbane.

(b) The relative importance of the main sectors of secondary industry in Queensland

In 1958-59, there was a total of 5,572 establishments (excluding heat, light and power) which employed a total of 103,503 workers. The industrial metals, machines and conveyances section had approximately 39 per cent. of the establishments, with 36 per cent. of the workers. Food, drink and tobacco came next with 18 per cent. of establishments and 26 per cent. of workers, followed by sawmills, joinery, boxes, &c., with 13 per cent. and 10 per cent. of each, respectively. Clothing (except knitted) had 9 per cent. of the establishments and 8 per cent. of the workers; paper, stationery and printing had only 4 per cent. of the establishments but 6 per cent. of the workers. The rest of factory production therefore accounted for only 17 per cent. of all establishments and 14 per cent. of all workers.

Between 1947-48 and 1957-58 the number of factories employing more than 100 workers increased by 31, and the proportion of workers employed in them increased from 45.9 to 46.7 per cent. Although the number of workers in factories employing 11 to 100 workers increased by 6,548 in the same period, the relative importance of the

group declined from 40.0 to 36.7 per cent. and the proportion of workers in factories employing up to ten increased from 14.6 to 16.6 per cent. The sectors of industry where establishments of over 100 workers predominated in 1958-59 were as follows:—

	Total Workers	Workers in factories over 100	Number of Establish- ments over 100
Plant, equipment and machinery	6,006	3,401	13
Foundries (ferrous)	862	433	2
Extracting and refining of other metals ..	596	463	1
Electrical machinery, cables, &c.	2,069	1,184	3
Tramcars and railway rolling stock	8,435	7,650	12
Motor vehicle construction and assembly ..	857	760	3
Ship and boat building	1,411	1,067	4
Agricultural machinery	1,353	791	2
Galvanised ironworking, &c.	1,483	822	5
Stoves, ovens and ranges	496	423	2
Biscuits	854	723	2
Sugar mills	6,621	6,578	30
Sugar refineries and distilleries	517	476	3
Jam, fruit and vegetable conserving	1,568	1,311	4
Bacon curing	1,660	1,506	6
Margarine	260	156	1
Meat and fish preserving	7,274	6,789	15
Breweries	858	714	3
Ice cream	379	204	1
Condensed and dried milk	136	113	1
Peanuts	322	539	2
Plywood mills	1,860	1,115	8
Cement (Portland) and cement goods	993	492	2
Coke works, asbestos cement sheets, &c. ..	349	438	2
Glass	448	170	1
(Chemical) fertilisers and oils	582	249	2)*
Cotton ginning, spinning and weaving	246	190	1
Wool carding and spinning	920	920	4
Hosiery and other knitted goods	502	502	3
Foundation garments	174	168	1
Newspapers and periodicals	2,290	1,368	3
Cardboard boxes	427	260	1
Paper bags, &c.	362	249	1
Rubber goods (including tyres)	1,136	997	3

* In 1957-58 the total was 384 workers of which 247 were employed in 2 establishments over 100.

Although the industrial metals, machines and conveyances section was the largest employer of labour in 1958-59, it was not the largest user of capital. Some 48 per cent. of all capital used in factory production was attributable to the food, drink and tobacco sector; the industrial metals, &c., sector used some 23 per cent. The enhanced position of the food sector stems partly from the seasonal pattern of employment, so that to produce a given level of output, resources must be some two or three times greater than if production could be spread over the whole year. When considering the usage of materials (and value of output) the position of the food sector is even further enhanced. Thus in 1958-59 the food sector used some 60 per cent. of "all other materials" (i.e. excluding such things as containers, tools, &c., fuel and water) used by factories in the State. The more important sub-sections of the food sector were:—

	Cost of materials used £ million
Meat and fish preserving	46.9
Sugar mills	44.3
Butter factories	17.1
Bacon curing	7.5
Flour milling	5.3
Sugar refineries and distilleries	5.3
	126.4

(Out of a total for the sector of 150.8 and for all factories of 259.3)

The industrial metals sector was of reduced significance as a user of materials (only some 20 per cent. of the total) but included some important individual sections, as follows:—

	Cost of materials used in the industrial metals sector £ million
Extracting and refining of other metals (i.e. non-ferrous)	18.1
Plant, equipment and machinery	7.3
M.V. repairs	6.2
Galvanised ironworking, pipes, tubes and fittings	4.9
	36.5

(Out of a total for the sector of 51.9)

The bulk of containers and packing materials are used in the food sector which absorbed £9.3 million out of a total of £11.2 million spent by all industries. The largest using sub-sections were jam, fruit and vegetables canning and meat and fish preserving (£2.4 million each). Expenditure on tools and repairs to plant by the food sector was also high at £3.9 million out of a total of £7.9 million. That

CAPITAL USED, VALUE OF OUTPUT PER WORKER FOR THE MAIN SECTORS OF FACTORY PRODUCTION IN QUEENSLAND, 1958-59

Class	Capital used	*	Value of output	*	Cost of materials	*	Value of production	*	Wages	*
	£		£		£		£		£	
Treatment of non-metalliferous mine and quarry products	2,142	3	4,698	4	2,654	3	2,043	2	932	1
Bricks, pottery, glass, &c.	1,403	8	2,803	10	1,106	11	1,697	4	865	4
Chemicals, &c.	2,175	2	7,980	1	5,240	2	2,739	1	907	2
Industrial metals, machines and conveyances .. .	804	9	2,839	9	1,510	8	1,328	8	815	6
Textiles	875	7	3,128	6	2,062	6	1,065	11	620	12
Skins and leather	637	12	5,782	3	2,412	4	1,466	7	783	8
Clothing (except knitted)	472	13	1,499	13	659	13	839	13	330	13
Food, drink and tobacco	2,233	1	7,697	2	6,012	1	1,684	5	906	3
Sawmills, joinery, boxes, &c.	738	10	2,882	8	1,613	7	1,268	9	749	9
Furniture of wood, bedding, &c.	728	11	2,570	11	1,420	10	1,149	10	673	11
Paper, stationery, printing, bookbinding, &c. . .	1,786	4	3,113	7	1,508	9	1,605	6	833	5
Rubber	1,253	6	3,792	5	2,088	5	1,703	3	794	7
Miscellaneous products	856	8	1,910	12	860	12	1,049	12	683	10

* Relative position

of the industrial metals sector was £1.7 million. When the value of "production" is considered, the industrial metals sector is restored to first place. In 1958-59 it accounted for approximately one-third of "production" by factories, whilst the food sector accounted for just under that proportion. Other sections of some importance were saw mills with 9 per cent., paper, &c., with 6 per cent., chemicals, &c., with 3 per cent. and treatment of non-metalliferous mine and quarry products with just under 6 per cent. In order of importance by value of "production" the industrial sectors were as follows:—

	Value of Production (Output less cost of materials)
	£ million
Industrial metals, &c.	49.3
of which—	
Tramcars and railway rolling stock	8.8
M.V. repairs	7.5
Plant, equipment and machinery	7.9
M.V. construction and assembly	4.6
Galvanised iron working, pipes, tubes and fittings ..	2.5
Electrical machinery and cables	2.4
Other engineering	2.2
Extracting and refining of non-ferrous metals .. .	
Food, drink and tobacco	46.8
of which—	
Sugar mills	13.6
Meat and fish preserving	10.2
Bakeries	3.4
Bacon curing	2.6
Breweries	2.5
Jam, fruit and vegetable canning	2.3
Butter factories	2.0
Saw mills, &c.	13.7
of which—	
Saw mills	8.1
Plywood mills	2.5
Paper, &c.	9.6
of which—	
Newspaper and periodicals	3.9
General printing	2.9
Clothing (except knitted)	6.5
Chemicals, dyes, paints, oils, &c.	5.0
of which—	
Oils (vegetable, mineral and animal) and chemical fertilisers	2.0
Treatment of non-metalliferous mine and quarry products	4.0
of which—	
Cement (Portland) and cement goods	2.4
Furniture of wood, &c.	3.4
of which—	
Cabinet and furniture making	2.4
Rubber	3.0
of which—	
Rubber goods (including tyres)	2.1
Textiles and textile goods	2.3
Bricks, pottery and glass	2.2
Skins and leather (not footwear)	1.7
Other	1.0
Total	148.6

In the above table the various aspects of the main sectors of industry are given as an average per worker. It can readily be seen that even in terms of capital per worker the food sector has first position. What is more significant is that it is the "capital intensive" industries such as food, chemicals and treatment of non-metalliferous products which are the large users of raw materials in Queensland and tend also to have the highest value of production and the highest earnings per worker. The bricks, pottery and glass sector comes lower as a user of raw material by value since its raw material is relatively cheap. The rubber sector is rather exceptional in Queensland, where a moderate rate of capital usage gives it a high value of production. At the other end of the scale the position of the clothing, furniture and miscellaneous sectors are noteworthy for their consistently low ranking on this analysis.

The following two tables give percentage breakdowns of the various cost items for the main sectors. It is appreciated that there are considerable variations within sections, but nevertheless these tables also bring out the outstanding differences between sectors. In the first table the position of the large users of materials is well illustrated as also is that of what would appear to be the more labour intensive industries. The residual item of costs in the last column would seem to be of greatest importance to those sectors where distribution is a particular problem. The second table highlights those sectors where containers and packaging are of importance, maintenance an important factor, and the usage of fuel an important item in costs.

RELATIVE IMPORTANCE OF MATERIALS AND WAGES AND OTHER COSTS IN VALUE OF OUTPUT FOR THE MAIN SECTORS—QUEENSLAND, 1958-59

Class	Cost of materials as a per cent. of value of output	Wages as a per cent. of value of output	Value of production less wages, as a per cent. of value of output
	*	*	*
Treatment of non-metalliferous goods	56.5 (5)	19.8 (13)	23.6 (5)
Bricks, pottery, &c.	39.5 (13)	30.8 (5)	29.7 (1)
Chemicals	65.7 (2)	11.4 (15)	22.9 (6)
Industrial metals	53.2 (9)	28.7 (6)	18.1 (12)
Precious metals	25.0 (15)	46.9 (1)	28.1 (2)
Textiles	65.9 (3)	19.8 (12)	14.3 (14)
Skins	62.2 (4)	20.2 (11)	29.6 (3)
Clothing	44.1 (12)	35.3 (4)	20.6 (7)
Food	78.1 (1)	11.8 (14)	10.1 (15)
Sawmills	55.9 (6)	26.0 (9)	18.1 (11)
Furniture	55.2 (7)	26.2 (8)	18.6 (9)
Paper	48.4 (10)	26.8 (7)	24.8 (3)
Rubber	55.1 (8)	20.9 (10)	24.0 (4)
Musical instruments	35.4 (14)	46.2 (2)	18.4 (10)
Miscellaneous products	45.1 (11)	35.8 (3)	19.1 (8)

* Relative importance

The predominant position of the sectors of factory production concerned with the initial treatment of raw materials (even in the industrial metals sector, the extracting and

BREAKDOWN OF COST OF MATERIALS, &c. FOR THE MAIN SECTORS IN QUEENSLAND, 1958-59

Class	Containers, &c.	Per cent.	Tools replaced, repairs to plant	Per cent.	All other materials used	Per cent.	Power, fuel light	Per cent.	Total	Per cent.
	£		£		£		£		£	
Treatment of non-metalliferous goods	285,468	5.5	370,862	7.1	3,682,777	70.7	869,898	16.7	5,209,005	100
Bricks, pottery	6,606	0.5	217,083	14.8	778,550	53.1	464,898	31.6	1,467,137	100
Chemicals	1,023,138	10.6	297,941	3.1	7,945,370	82.5	366,405	3.8	9,632,854	100
Industrial metals	201,543	0.4	1,703,954	3.0	51,944,386	92.8	2,148,552	3.8	55,998,435	100
Precious metals	387	0.4	4,094	3.8	90,959	84.8	11,778	11.0	107,218	100
Textiles	29,656	0.8	91,585	2.0	4,211,125	95.6	71,567	1.6	4,403,933	100
Skins	18,804	0.7	79,218	2.8	2,615,452	93.9	72,912	2.6	2,786,386	100
Clothing	98,964	1.9	115,732	2.3	4,747,002	92.4	175,258	3.4	5,136,956	100
Food	9,357,230	5.6	3,941,668	2.4	150,882,809	90.2	3,111,745	1.8	167,193,452	100
Sawmills	79,698	0.5	747,815	4.3	16,013,359	91.8	597,514	3.4	17,438,386	100
Furniture	16,207	0.4	47,196	1.1	4,036,331	97.3	48,898	1.2	4,148,632	100
Paper	58,809	0.6	236,810	2.6	8,429,439	93.7	268,263	3.1	8,993,321	100
Rubber	35,496	0.9	117,698	3.2	3,377,699	91.1	178,280	4.8	3,709,066	100
Musical instruments	108	0.4	513	7.7	28,173	95.2	787	2.7	29,581	100
Miscellaneous products	7,793	1.5	10,190	2.0	485,522	90.4	13,032	2.5	516,337	100
Totals, and average per cent.	11,219,907	3.9	7,982,351	2.8	259,268,854	90.4	8,299,787	2.9	286,770,899	100

refining of non-ferrous metals is the biggest single contributor to output) is reflected in a comparison of the importance of various Queensland sectors with those of Australia as a whole. In the last few years, whilst certain other areas of Australia have been experiencing a much greater diversification of industry, the relative importance of Queensland factory activity outside the processing industries has tended to decline.

The following table gives the percentage of total Australian output attributable to Queensland for the main sectors. The basic information for these percentages was obtained from the Year Book of the Commonwealth of Australia where a reasonable degree of comparability could be ensured.

Industrial sector	Percentage of Australian Output
Portland cement and cement goods ..	11.2*
Industrial and heavy chemicals and acids (including explosives) ..	1.6
Pharmaceutical and toilet preparations ..	1.0
Whitelead, paints and varnish ..	7.2
Soap and candles ..	4.9
Smelting, converting and refining and rolling of iron and steel ..	Nil
	(Australian total £230 million)
Foundries (ferrous) ..	10.6
Plant, equipment and machinery (including machine tools) ..	7.0
Other engineering ..	6.8
Extracting and refining of non-ferrous metals—alloys ..	21.0
Electrical machinery, cables and apparatus ..	3.1
Tramcars and railway rolling stock (excluding 15 non-public bodies) ..	15.5
Motor vehicles—Construction, assembly, repair ..	7.7
Agricultural machines and implements ..	10.1
Wireless and amplifying apparatus ..	1.0*
Cotton spinning and weaving (Ginning included in Queensland) ..	2.0*
Wool carding, spinning and weaving ..	3.4
Hosiery and other knitted goods ..	3.6
Tanning, curing and leather dressing ..	13.0
Tailoring and ready made clothing ..	5.7
Dress making and millinery ..	8.8*
Shirts, collars and underclothing ..	4.8
Boots and shoes ..	4.8
Flour-milling ..	10.5
Bakeries (including cakes and pastries) ..	10.8
Sugar mills (raw sugar production) ..	97.0
Confectionery ..	2.1
Jam, fruit and vegetable canning, pickles, sauce and vinegar ..	11.0
Bacon curing ..	32.0
Butter, cheese and condensed and dried milk ..	16.7
Meat and fish preserving ..	71.0
Breweries ..	12.3
Wineries and distilleries ..	6.3
Tobacco, cigar and cigarettes ..	Neg.
	(Australia 46,770 excluding duty)
Sawmills and plywood and veneer mills ..	19.0
Cabinet and furniture making and upholstery ..	11.9
Government and general printing works ..	6.8
Newspapers and periodicals ..	13.1
Paper making, including pulp mills ..	5.6*
Rubber goods ..	7.8

* 1956-57

In 1957-58, Queensland had 9.5 per cent. of manufacturing output in Australia as a whole. From the above list of 41 sectors, only 17 were above this average, and of these latter only seven did not relate directly to the processing of primary products. These seven sectors included breweries, bakeries and newspapers and periodicals which were until recently at any rate comparatively sheltered industries largely geared to interstate requirements. The rest were agricultural machinery, foundries (ferrous) and tramcars and railway rolling stock, which are all very much concerned with the production and movement of primary produce. Even the remaining sector, cement and cement goods owes much of its high level of consumption in Queensland to the development and exploitation of physical resources.

(c) The main sectors of secondary industry in Queensland

In Appendix B details are given relating to the main industrial sectors in Queensland. The following comments should be read in conjunction with this Appendix.

Queensland has two cement works at present, one at Darra, near Brisbane, with a capacity of 370,000 tons per annum, now being increased to 500,000 tons, and one at Stuart, near Townsville, with a capacity of 70,000 tons per annum. The Brisbane factory produces cement cheaper than that made in any other capital city in Australia.

CEMENT PRICES FOR INDUSTRY, MAY 1961

	(Per ton)	£ s. d.
Brisbane	10 1 9
Adelaide	10 3 6
Melbourne	11 15 0
Perth	12 15 0
Hobart	13 6 0
Sydney	13 12 0

Townsville's cement sells at £11 per ton, plus £1 for bags. This factory has been benefiting from the fact that consumption of cement in North Queensland has been exceptionally high—eight bags per head against the average for the whole of Queensland of five bags per head. But this has been mainly due to the concentration of public works in the area in recent years, and consumption is now down to six bags per head. The position of the Townsville works has been made more difficult by competition from cheap

imports of Japanese cement, which is back-loaded more or less as ballast in the ships carrying coal to Japan. Some idea of the difficulty this creates for the Stuart company may be gained from the fact that freight from Stuart to Cairns is £5 12s. a ton, whilst it is 45s. to 50s. a ton from Japan to Cairns. Japanese competition has stopped the export trade which the Brisbane works used to enjoy to Darwin and New Guinea. The Brisbane works has also in the past sold cement as far south as Newcastle, but freight problems make this business difficult. Rockhampton is almost certain to get a cement works soon, with a capacity of almost 50,000 tons per annum. There is some doubt whether the market is sufficient to support a cement works of economic size at present. Cement in Rockhampton costs at present over £18 a ton, of which the freight from Brisbane accounts for nearly half, and the output of the new works would probably sell at about £13 a ton. There are various works for concrete products along the coast, and the fact that most Queensland cities are by no means completely sewered as yet means that they should enjoy a good market for some years to come.

There is at present only one coke-works, at Collinsville in North Queensland.

Before the war, timber was the principal building material used in Queensland. Since the war, the depletion of forests, combined with the advent of newer building materials, has led to an increase in the use of hardboard, bricks, and concrete blocks, for building. The State produces bricks, earthenware pipes and fittings, tiles, cement goods, and asbestos-cement sheet. It has 27 per cent. of Australia's total production of the last item. Apart from one or two specialised products, it may be said that the State is self-sufficient in building materials; in fact, due partly to the credit squeeze, surplus capacity exists. In March, 1960, common clay bricks in Queensland were cheaper than those in New South Wales, Victoria and South Australia. There is competition from the south in some plaster products, and some glass and earthenware is imported from other States. Queensland is Australia's main source of plywood timbers, but only about 20 per cent. is made into plywood in the State. As far as fibre board is concerned, Queensland has participated in a small way in the remarkable expansion that has taken place in this industry in Australia in recent years: but further development is limited by the fact that ample forest reserves exist near the large factories in the south which are also close to the main markets, and by the depletion of the South Queensland reserves (see Part I). Some Australian hardboard is exported, but at prices lower than those on the domestic market—a procedure well known in Australia.

As far as *builders' hardware* is concerned, Queensland has some highly efficient companies which sell all over Australia. Glass louvers are sold throughout the world from factories in Queensland, one of which has subsidiary companies in Sydney and in the United Kingdom.

The *paint* industry is well established in Queensland, and a number of important paint manufacturers have mixing plants in the State. However, most raw materials come from abroad and from southern manufacturers who are able to compete in the Queensland market partly by virtue of their longer production runs. Zinc oxide is an interesting case in point, since there is a zinc oxide factory in Queensland which has closed down because it cannot compete with the south in its own market. The reason here is that under Queensland government health regulations, the zinc oxide used must contain less than one per cent. lead; it is practically impossible consistently to produce zinc oxide to such fine tolerances, but manufacturers in the south, with their bigger production runs, can set aside for the Queensland market any runs containing the required minimum of lead, and thereby supply the State's needs. The Brisbane factory is unable to compete by selling oxide that does not comply with the required criteria in other States, due to the fact that it would have to carry the burden of transport costs both on raw materials from the south to Brisbane, and on the oxide from Brisbane back to the south. The industry has been going through a difficult time, and though capacity in Queensland is enough to provide the great majority of the State's needs, competition from the south for a smaller market due to the credit squeeze has meant that some firms have closed down and the industry is working at only about 50 per cent. capacity. The situation as regards North Queensland is worth mentioning. Consumption there, due mainly to the humid conditions, is extremely high, and three of the main manufacturers have established factories in Townsville. Competition has, however, closed down two of them, and the remaining one is able to continue because it has no other plant in Queensland—the nearest factory producing its brands is in Melbourne (where costs are ten per cent. lower than those in Townsville).

The only *fertiliser* produced in the State is superphosphate. The total capacity of Queensland's factories—one at Pinkenba near Brisbane and one in Cairns—is 70,000 tons, of which the Cairns plant accounts for 25,000 tons. 1958-59 production was 58,000 tons, whilst sales amounted to 53,000 tons, so there is a considerable excess of capacity at present. In addition, the Cairns and Pinkenba plants have mixing units producing granulated mixtures, and there are mixing units

as well at Stanthorpe, and Mackay. The Queensland superphosphate industry also exports to New Guinea and the Northern Territory. In common with the entire Australian superphosphate industry, Queensland gets its phosphate rock from the Pacific and Indian Ocean islands of Nauru, Ocean Island, and Christmas Island. Reserves of the first two islands have been estimated by the British Phosphate Commissioners (who control its production and distribution in Australia) to have lives of 40 years and 28 years respectively. Reserves on Christmas Island are not yet known but they are certainly adequate for many years' production. Most of the sulphuric acid used in the Australian industry—nearly 50 per cent.—is made from brimstone; the Pinkenba plant makes it from brimstone (about 55 per cent.) and pyrite produced at Mount Morgan. By virtue largely of the Australian Government's encouragement of sulphuric acid made from domestic sources, pyrites enjoys some advantages in the way of bounties, and acid from this source accounted for about 32 per cent. of the Commonwealth's production in 1958-59. A change in the world supply position of brimstone, with the discovery of large reserves in the Americas, led the Government to modify its policy in 1959 but it is at present respecting its commitments to those producers who have already responded. Australian production of superphosphate in 1958-59 amounted to 2.1 million tons, of which Queensland produces only about 2½ per cent. Over half Australia's production is used for pasture improvement. Consumption has been increasing at the rate of 4.5 per cent. a year, and is expected to reach 2.9 million tons in 1964-65. In April, 1960, South Queensland superphosphate was the second cheapest in Australia, though North Queensland production was much more expensive.

EX-WORKS PRICES OF SUPERPHOSPHATE IN
NEW JUTE BAGS (Per ton)

	£	s.	d.
New South Wales	12	14	0
Victoria	12	2	6
South Australia	12	13	0
Western Australia	12	13	0
South Queensland	12	6	0
North Queensland	14	18	6
Tasmania	13	7	0

No synthetic nitrogenous fertilisers are produced in Queensland, despite the fact that the State consumes over half Australia's output of ammonium sulphate, mainly on the sugar-cane fields. Total Australian capacity for ammonium sulphate is 97,000 tons, which is enough to supply the total demand at present. Demand is elastic, unlike that of superphosphate, and the industry has been faced in recent years with a falling market and growing competition from urea.

Urea is imported, chiefly from Germany and Japan, and the fact that it has a much greater nitrogen content per ton than ammonium sulphate is of advantage in a country where transport costs are such a problem. Once again, back-loading helps the Japanese industry, and the cost per pound of nitrogen from Japanese urea is less than that from ammonium sulphate, despite falling prices for the latter. A temporary duty on imported nitrogenous fertilisers has, however, since been imposed.

COMPARATIVE FERTILISER PRICES

Fertiliser	Price per ton (ex store)	Cost per lb. of nitrogen
Australian ammonium sulphate—	£ s. d.	d.
1958	38 10 0	1.8
July, 1959	36 0 0	1.7
January, 1961	29 15 0	1.3½
German urea (duty free)	74 15 0	1.5
Japanese urea (duty free)	55 0 0	1.0½

There are negligible supplies of potash in Australia, and it is imported, mainly from Germany and France. There has been a spectacular growth in usage in recent years as large areas of Australia—including the wallum country in Queensland—are deficient in potash, but its consumption is still small compared with superphosphate. Queensland in fact uses 44 per cent. of the potash imported, once again mainly on the sugar fields. The largest growth in recent years has been for mixing with superphosphate for pasture improvement, and it is thought that the growing importance of mixed fertilisers is likely to raise demand for potash by about 10 to 12 per cent. a year in the future. This is of particular importance to Queensland, as 80 per cent. of the State's superphosphate-type fertilisers are mixed, whilst the equivalent figure in other States is only 8-10 per cent. There is no doubt that the demand for these mixed granulated fertilisers—which sometimes also contain trace elements such as copper, manganese, zinc, boron, molybdenum, iron and cobalt—will increase greatly in the coming years, at a rate of at least 8 per cent. a year.

Apart from the production of fertilisers and sulphuric acid, and the distillation of molasses, the chemical industry has hardly been developed in Queensland, the advantages of large-scale manufacture near the principal markets in the south being so great. Acetylene, oxygen and compressed air are produced at Townsville and Rockhampton, and these three, with the addition of other industrial and medical gases,

in Brisbane. That this is so is due to the transport economies of producing industrial gases near the centres where they are to be used. Argon, hydrogen, LPG, nitrous oxide, &c., are imported from other States. Some chemical formulation is also done in the State, and synthetic resins for the plywood industry are manufactured, among other comparatively small industrial chemical activities.

As far as pharmaceuticals and household chemicals are concerned there are a number of concerns which formulate and package household detergents, disinfectants, and bleaches, and some pharmaceutical products. Some of these have done extremely well in recent years; but here again, the basic materials come from abroad or the southern States, and the firms themselves are usually inclined to admit that they are "packagers" and distributors rather than manufacturers. Some of these have been able to establish sales in other States, occasionally a significant proportion of their output. Competition from large firms whose products are sold nationally has increased, and the smaller Queensland firms have had to diversify since they cannot afford the large promotional budgets required to obtain general household acceptance. Two-thirds of the Australian pharmaceutical industry is located in New South Wales, and nearly all raw materials are imported into Australia, as well as considerable quantities of finished products.

In the metal goods industries, Brisbane and its surrounding area has no disadvantage as far as steel costs are concerned, in that steel is sold on a capital city price basis, and so costs no more than it does in, say, Sydney. Outside Southern Queensland, transport enters into the cost of raw materials, and the industry is mainly confined to agricultural machinery (particularly sugar machinery), some mining machinery, steel fabricating items which are large or awkward in relation to their weight, and on which the balance of transport advantage lies in manufacturing near the site, and small jobbing engineering work. South Queensland has several large and old-established foundries, engineering works and shipbuilding yards. Some of these are national rather than purely Queensland companies, and besides selling in other States, have exported overseas. Although exports are limited by high costs in comparison with other industrialised countries, some Colombo plan orders of importance have come their way. Most of these companies are strongly oriented towards agricultural, water supply, and railway business. In the latter category Queensland, which has several State railway workshops as well as a branch of the Commonwealth Engineering Company and the principal factory in Australia belonging to the English Electric Company, is practically self-sufficient. Exports to other States of railway rolling stock and locomotives are also not inconsiderable. Some companies sell agricultural machinery on an Australia-wide basis, but in this category more is imported interstate than is produced. Some sugar machinery—which is the basis of most engineering works north of Brisbane—is exported to other sugar-growing areas of the world, but this trade has not developed as much as was hoped. The pattern seems to be that one or two machines are imported from Queensland to the overseas country, for study and incorporation in their own domestically-made machinery. Nevertheless, due to the advance of mechanisation in farming, this industry is doing quite well. Tractors are imported from other States. A range of internal combustion engines is manufactured in Queensland, and the State has one of the six largest Australian manufacturers in this field.

Heavy electrical equipment is manufactured in the south of the State, including transformers up to 60 MVA, for both the Australian and the Queensland market; but the advantage of manufacturing the smaller electrical apparatus and domestic electrical appliances lies much more with larger centres and so these are mainly imported from the southern States. Electric wires and cables are also now manufactured at branch factories of two of the major Australia makers.

Despite the various lines in which Queensland's metal goods industries are successful, the pattern of trade in this category remains one of majority imports from the southern States. Motor vehicles and parts account for a large proportion of these interstate imports, but even if these are left out of account, Queensland still imports far more metal goods and engineering products than it sells in other States or overseas.

For the year 1959-60, output of consumer durables in Australia was 25 per cent. higher than the previous year, employment was 18 per cent. higher, and retail sales were also higher. The industry generally was working close to capacity, and considerable planned investment was in hand. Imports also rose, but demand was sufficient to absorb both domestic production and imports. The credit restrictions of November 1960—and in particular the hire purchase restrictions—hit the industry hard, however, and competition for the restricted market has been intense. The Queensland market has been perhaps harder hit than that of New South Wales and Victoria, particularly for motor cars.

Ninety-five per cent. of vehicles sold in Australia are either assembled or produced by eight major firms, who are all either subsidiaries of, or have financial connections with,

foreign companies. The trend today is towards a higher percentage of locally made components and complete vehicles. In the passenger vehicle field alone, the value of output for 1959-60 amounted to nearly £190 million of which imported components or parts were valued at £70.5 million. For the same period, exports of passenger vehicles were worth £2.1 million and imports totalled £4.1 million.

Vehicle registrations of all kinds have been increasing in Queensland at the rate of more than 20,000 vehicles a year. The only company to assemble complete motor vehicles in the State, from parts imported from Melbourne, is Ford. The number of its employees has fallen from 750 to 350 since the end of 1960. Motor bodies for commercial vehicles are made in Brisbane. Some assembling is also done by the General Motor Holden agents in Brisbane.

As far as other consumer durables are concerned, firms in Brisbane produce a wide range of articles, including gas and electric ranges, stainless steel sinks, gas and electric boilers, electric hot water units, electric bath heaters, pressed steel porcelain, stainless steel laundry units, water softeners, laminated plastics, refrigerators and baths.

Competition from southern firms has been particularly intense in this sector, however, and two of the largest Brisbane firms have recently been taken over by southern concerns. This has, in fact, proved to be of considerable benefit to them: it has not only given them stronger financial backing to withstand hard trading times, but by arranging back-loading with the parent companies, has enabled them to improve their competitive position in the southern markets.

Although both *textiles and clothing* are produced in Queensland considerable quantities are imported, chiefly from other States, but also from overseas.

The State's output of textiles for the year 1958-59 was £4.5 million, whilst imports totalled £17.6 million, mainly from other States, and exports £2.8 million. The three major products are textile bags, blankets, and woollen cloth. The value of output of the clothing industry amounted to £11.3 million in 1958-59, of which £3 million was exported, chiefly to other States. Imports for the same period were considerably more, totalling £18 million, again chiefly from other States. The Brisbane area has one or two highly efficient firms in the clothing business, selling a large proportion—sometimes over 80 per cent.—of their production in other States. But these obtain most of their materials from the south and the figures given above show that the State is a heavy net importer of both textiles and clothing.

The *leather* industry in Australia—as indeed throughout the world—has declined over the past fifteen years, due both to competition from synthetics and to the industry's failure to modernise during the prosperous wartime and immediate post-war years.

In 1949-50 there were 145 firms in the industry, employing 5,473 people. By 1957-58, there were but 124 firms employing 4,708 people. Queensland's industry is limited by tick infestation in the north, which reduces the value of the hides. The national value of output for 1957-58 was £18.6 million, of which Queensland's share amounted to £2.6 million for tanning, currying and leather dressing, and £2.1 million for boots and shoes.

Because of the importance of such industries as sugar, beef, and pineapple canning, the balance of trade in the general *food, drink, and tobacco* section is heavily in Queensland's favour. In addition, the manufacture of biscuits, cereal foods, confectionery, jam, jellies, pickles, sauces, condiments, condensed and dried milk, margarine, soft drinks, beer, ice cream, canned vegetables and "instant" mashed potato is well established. Some of the Queensland firms are large, and sell on a nation-wide basis. But interstate imports of most of these products are larger than local production. Once again, most of the big companies capable of large promotional and marketing budgets are in the south, but some have factories in Queensland.

In 1957-58, there were 1,644 factories producing goods classified as *cabinets, furniture and upholstery* in Australia, with a combined value of output of over £41 million. Queensland's share of this amounted to nearly £5 million, just over 12 per cent. of the total.

Imports into Queensland for 1958-59 were worth £550,000 which was more than balanced by exports valued at £597,000. The bulk of exports go to other States, but approximately 70 per cent. of the imports came from overseas.

Furniture factories in the north, once flourishing, have been unable to compete with mass-producers.

Paper board is made at Petrie, near Brisbane, but considerable quantities of paper are still imported interstate. Small quantities are also exported interstate. The mill near Brisbane is currently being doubled in capacity, and expects eventually to supply most of the State's needs. Costs in the Australian paper industry tend to be particularly high, due partly to the difficulties of using short-fibred eucalypt pulp, which must be mixed with imported softwood pulp for most purposes. The industry has recently asked for and been given further temporary tariff protection, and exports are not important.

The value of Australian output of *packages and containers* of all types has increased greatly, from £10 million in 1938-39 to nearly £100 million in 1957-58. Little change has occurred in the percentage of the market which each type of material used occupies, although it may be expected that in the future, paper and board, metals and plastics will be increasingly used and glass textiles and wood will occupy smaller shares of the market.

BREAKDOWN OF PACKAGING MATERIALS USED IN AUSTRALIA

Type	Output, 1957-58	Per cent. of Total
	£ million	Per cent.
Paper and board	38.1	39
Metals	32.5	33
Wood	9.4	10
Glass	9.3	9
Plastics	6.3	6
Textiles	2.7	3
	98.3	100

The main user of packaging materials in Queensland is the food processing industry, which consumed £49.4 million worth in 1957-58.

Raw materials used in producing packaging materials are being increasingly produced in Australia, but substantial amounts of tinplate, aluminium foil, certain plastics and cellulose, jute, and calico, are still imported. Queensland produces nearly 12 per cent. of the national output of metal containers. The Australian glass container industry is largely controlled by one company, Australian Chemical Industries Ltd., which has a factory in Queensland. Possible growth in demand for glass containers in the State is foreseen by plans to install a third furnace by 1965, when capacity is expected to meet demand then although installed capacity at present is some 20 per cent. above current demand. Plastic containers are also produced largely by Australian Chemical Industries Ltd., again with a Queensland branch. Three of the largest textile container producers are situated in Queensland, and the State is third in order of importance in the modern container field, after New South Wales and Victoria.

A full range of packaging is produced in Queensland, and one company which has expanded rapidly in recent years, accounts for about 30 per cent. of Australia's crown tops. Many of the meat works make their own cans, but their is a small can-making plant in Townsville making the larger ranges of cans, on which the transport component is great, mainly for the meat works.

The *rubber manufacturing* industry is one that is well established in the State, and some of the larger firms sell a good proportion of their production in New South Wales. One of the large Australian tyre manufacturers has a big factory in Queensland selling about half its production in the neighbouring State; but this is a two-way trade, and the other large tyre firms also sell in Queensland from factories in the south, and in 1958-59 accounted for over half the Queensland market. Rubber for industrial purposes is taking up a larger and larger share of the production of other rubber goods. Rubber is an industry in which by virtue of the fact that raw materials—which account for about 80 per cent. of the value of the finished product—are nearly all imported, Queensland is at no disadvantage vis-a-vis the more industrialised States; the policy of freight equalisation ensures that Brisbane pays no more for its raw materials than other States. As far as retail rubber goods, such as footwear, are concerned, however, the growth of chain stores on a national scale, with purchasing offices in the south, has affected sales of Queensland-made goods in the State itself.

APPENDIX A

TAXATION, GOVERNMENT EXPENDITURE AND TARIFFS

(i.) The Division of Powers of Taxation Between the Commonwealth and the State Governments

Since Federation there has been a shift of power from the various State Governments to the Commonwealth Government. Today the Commonwealth Government imposes personal, company, sales, and payroll taxes. It also imposes estate duty, gift duty, the wool tax, the stevedoring industry charge, and the tobacco charge. The minor taxes are in the hands of the State Governments, and vary only in detail from one State to another. In Queensland, the following are included in this category; land tax, probate and succession duty, gift duty, the taxation of racing and betting, lottery taxes, and motor taxation.

Finance requirements of the various State Governments are reviewed by the Commonwealth Government which proceeds to advance funds on a system of grants. This method is expected to yield the most equitable distribution of resources.

(ii.) Personal Taxation

The imposition of personal taxes is calculated upon a sliding scale rating formula varying with each £1 of income. This differs from the United Kingdom, where a flat rate obtains and a rebate scale makes allowance for those whose ability to pay is affected by low income or obligations for dependants. A resident taxpayer in Australia is taxed on gross income derived directly or indirectly from all sources whether in or out of Australia. Where the taxpayer is a non-resident he is taxed on the gross income derived directly or indirectly from all sources in Australia.

(iii.) Company Taxation

There is a flat rate of tax imposed upon companies. At present the rate of Primary Tax imposed upon companies is 7s. in the £1 on the first £5,000 of taxable income and 8s. in the £1 on the excess over £5,000 of taxable income. Private companies are subject to a Primary Tax of 5s. in the £1 on the first £5,000 of taxable income and 7s. in the £1 on any excess over £5,000. Furthermore they are liable to an Undistributed Profits Tax of 10s. in the £1 after certain exemptions.

Provision is made in the Income Tax Act imposing liability on a company for tax which it is authorised to deduct from interest paid by the company to a non-resident in respect to interest due on debentures of the company or money lodged at interest in Australia. However, when the return is lodged by the non-resident full credit is given for tax so deducted.

There is no rebate of taxation to receivers of dividends despite the fact that the company may have already been taxed. People accustomed to the United Kingdom Income Tax practices find it difficult to accept the justice of this aspect of Australian Taxation, which regards the shareholder, for the purpose of taxation, as a separate entity from the corporate body. Nevertheless it can be said that a rebate method is frequently arbitrary and involves high administrative costs.

(iv.) Sales Tax

Sales taxes are payable by manufacturers and wholesale merchants. Introduced in August, 1930, the rate has been altered from time to time. The most recent amendment was in August, 1961, when one rate, formerly set at 8½ per cent. was reduced to 2½ per cent., with the object of increasing sales of consumer durables.

(v.) Payroll Tax

Introduced in July, 1941, the payroll tax was designed to provide part of the finance for the national scheme of child endowment, and is payable on all wages paid or pay-

able in excess of the statutory amount of general exemption. Although the rate of tax has remained unchanged at 2½ per cent., the statutory amount of general exemption has varied; since 1st September, 1957, it has been £10,400 per annum.

(vi.) Exemptions from Taxation

Individuals are not taxed unless the total assessable income exceeds £104. This means that a non-resident may derive income from Australia to that extent without incurring Income Tax liability. Immediately it exceeds that amount it is taxable from £1 upwards. This exemption does not extend to companies.

Dividends from certain mining operations are exempt from taxation in respect of 20 per cent. of net income derived. Further exemptions are realised from profits arising from the revaluation of assets not acquired for the purpose of re-sale or out of premiums received on the issue of shares provided the dividend is satisfied by the issue of bonus shares. Dividends received by a resident company from another company are free of primary tax because the receiving company is allowed a rebate at the average rate of tax payable by the company on that portion of dividends included in taxable income.

2. TAXATION INDUCEMENTS

The various State Governments do not use taxation allowances to encourage local investment. The main reason for this would be that the most important provinces of taxation are concentrated in the hands of the Commonwealth Government.

The Commonwealth Government offers tax concessions on dividends from public loans, and offers a system of double taxation relief for overseas investors. This frequently returns the overseas investors a higher yield from their Australian equities than could be obtained by a domestic investor.

(i.) *Commonwealth Loan Taxation Inducement.*—There is a rebate of 2s. in the £1 which is allowed on the taxation of Commonwealth Loan interest. This, in conjunction with the Statutory Exemption from tax for income up to £104, has the effect, with the present rates of tax, of making a non-resident not taxable on incomes from sources in Australia up to about £900, if his only income from this country is derived from interest on Commonwealth Loans.

(ii.) *Double Taxation Relief Inducement.*—Non-resident individuals and companies are liable to tax on dividends to the extent to which they are paid out of profits derived from a source in Australia. This liability does not apply to British, United States, or Canadian residents deriving dividends from companies domiciled in their respective countries and deriving part of their income from Australian sources. Liability is therefore limited to non-residents other than persons of British, United States, or Canadian residence. In these cases the Taxation Department has power to assess the appropriate proportion of each dividend where a portion of the profits is derived from Australia.

(a) United Kingdom Double Taxation Agreement

The agreement for the avoidance of double taxation was signed in London on the 29th October, 1946, and became law in Australia under the Income Tax Assessment Act 1947 on the 3rd June, 1947.

This very much enhanced the attractiveness of ordinary shares in Australian companies to residents of the United Kingdom. United Kingdom shareholders are liable to tax at half rates in Australia on ordinary and preference dividends from Australian companies. In respect of ordinary and the participating portion of preference dividends the underlying tax (paid by the company on its profits) is added to the tax at half the rate paid by the shareholder for the purpose of determining the rebate from United Kingdom income tax. The effect is to increase the value of such dividends to a United Kingdom shareholder by the amount of Australian tax paid by the company.

Therefore United Kingdom shareholders may regard ordinary dividends from public companies in Australia for United Kingdom tax purposes as worth approximately from thirty to forty per cent. more than face value. If the company's effective rate of Australian tax is, for example, 7s. in the £1, credit is allowed for this amount plus credit for Australian tax paid by the shareholder at half the rates in determining liability for United Kingdom Tax.

(b) United States Double Taxation Convention

An agreement to reciprocate in granting exemption privileges to avoid double taxation was concluded between United States and Australia to operate from 1st July, 1953, in respect of Australian income, and from the 1st January, 1953, in respect of United States income. As far as dividends are concerned both countries have agreed to limit tax on dividends derived by residents of the other country to not more than 15 per cent.

(c) Canadian Double Taxation Agreement

A similar agreement to reciprocate in granting exemption privilege to avoid double tax was concluded between Canada and Australia to operate on the 1st October, 1957. This agreement operates in relation to Australian tax for the income year ended 30th June, 1958, and in Canada the agreement was effective as from the 1st January, 1958. The main difference between the agreement with Canada and that with the United States is that a Canadian company is exempt from domestic tax on dividends received from an Australian company. As in the United States Agreement a Canadian company is only taxable on Australian dividends, by Australia, to the extent of 15 per cent.

COMMONWEALTH REVENUE EXPENDITURE, 1957-58

	£'000
Defence Services ¹	186,295
War and Repatriation Services ²	163,130
Business Undertakings—	
(1) Post Office	131,763
(2) Railways	6,866
(3) Broadcasting	8,917
Social Services	147,546
Direct payment to or for States	247,485
Self-balancing items	104,747
Loan consolidation and investment reserves	12,408
Other ³	104,378
	357,782
Total	1,323,771

NOTE.—(1) Including new works paid for from revenue.

(2) Including new works paid for from revenue, repatriation services and pensions on account of the 1914-18 and 1939-45 wars.

(3) Including taxation reimbursements to States and subsidies, &c.

3. THE AUSTRALIAN CONSOLIDATED REVENUE FUNDS

COMMONWEALTH REVENUE RECEIPTS, 1957-58

	£'000
Taxation—	
(i) Customs and Excise ¹	303,051
(ii) Sales	137,778
(iii) Income ²	650,419
(iv) Land	11
(v) Other	64,530
Business Undertakings—	
(i) Post Office	96,776
(ii) Railways	4,576
(iii) Broadcasting	6,876
	108,228
Meat Export charge	5,927
Surplus balance of transit accounts	3,991
Interest and repayments	10,514
Defence and Civil Aviation Departments	7,248
Net profit on Note Issue	12,593
Other	19,481
Total	1,323,771

NOTE.—(1) Excluding £1,314,000 diesel fuel tax refunded during year.

(2) Including Social Services Contribution, which was merged with Income Tax after income year 1949-50; and Wool deduction, since 1950-51.

4 TARIFFS

The function of tariff imposition and collection in Australia is performed exclusively by an agency of The Federal Government, the Tariff Board.

Broadly speaking, Australian policy in this field has in recent years been towards higher tariff protection for local industries. Existing barriers are the Customs tariffs, primage duties, tariffs specifically for the protection of industry, and finally, import controls.

There are three classes of Customs tariffs. The first is the British Preferential tariff, which applies to goods manufactured or produced in the United Kingdom, and shipped or consigned direct to Australia. Such goods include the following: firstly, materials wholly produced in the United Kingdom, and also imported manufactured raw materials; secondly, goods of which the factory costs include at least 75 per cent. of United Kingdom labour and material, and finally, goods not produced in Australia, of which the factory costs are at least 25 per cent. represented by labour and material of United Kingdom origin.

By separate agreements, this tariff applies also to goods from Canada, New Zealand, Papua and New Guinea, with slight variations in the percentages of native labour and material requirements in each case; it also applies to specified goods from Ceylon, Ghana, Malaya, Singapore, the West Indies, and most colonies.

The second class is the Intermediate tariff, which applies firstly to those countries with which Australia has concluded trade agreements (including those mentioned above), and secondly, under "most favoured nation" agreements, or, in other words, to those countries with which the United Kingdom has agreements. It applies also to members of G.A.T.T.

The third class is the General tariff, which applies to goods other than those covered in the two preceding classifications, and is of very little significance.

In addition, primage duties are charged on certain goods, according to their type and origin, at a rate of four, five, or ten per cent. New Zealand, Norfolk Island, Fiji, Cocos Islands, Christmas Island, Papua and New Guinea are exempt.

Tariffs are also imposed on some goods whose importation would be detrimental to Australian industry. They are of five types. Firstly, there is a "dumping" duty, which is equal to the difference between the domestic price of goods produced in Australia, and the price of imported goods, if the latter are cheaper. Secondly, there is a similar duty to equalise differences in freight costs, on imported goods. Thirdly, a "countervailing" duty is imposed on imported goods, which is equal to the amount of subsidy, if and when given, to such goods in their country of origin. Fourthly, special duties may be charged on imports, in order to safeguard the interests of a third country, which may already be trading in or with Australia. Lastly, emergency duties may be imposed on goods entering Australia, if their entry is likely to threaten Australian industry or industries in a third country whose products enter Australia under preferential tariff.

Certain import controls also exist, essentially with the object of limiting imports under a given ceiling. They are currently only of slight significance.

Finally, a provision of Australian tariff legislation, with few parallels elsewhere, should be mentioned. It enables goods not readily available from domestic sources to be imported under by-law, either free of duty or at purely nominal rates.

FINANCIAL AGREEMENT—PAYMENTS BY THE COMMONWEALTH, 1959-60

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	Total
	£	£	£	£	£	£	£
Contributions towards Sinking Fund on State Debts	2,074,177	1,366,588	743,847	791,409	578,401	388,011	5,942,433
Per Caput	£ s. d. 0 10 11	£ s. d. 0 9 7	£ s. d. 0 10 3	£ s. d. 0 16 11	£ s. d. 0 15 11	£ s. d. 1 2 4	£ s. d. 0 11 9
Contribution towards Interest on State Debts	2,917,411	2,127,159	1,096,235	703,816	473,428	266,859	7,584,908
Per Caput	£ s. d. 0 15 5	£ s. d. 0 14 11	£ s. d. 0 15 2	£ s. d. 0 13 1	£ s. d. 0 13 1	£ s. d. 0 15 4	£ s. d. 0 15 1
	£4,991,588	£3,483,747	£1,840,082	£1,495,225	£1,051,829	£654,870	£13,527,341
Per Caput	£ s. d. 1 6 4	£ s. d. 1 4 6	£ s. d. 1 5 5	£ s. d. 1 12 0	£ s. d. 1 9 0	£ s. d. 1 17 8	£ s. d. 1 6 10

COMMONWEALTH PAYMENTS TO OR FOR THE STATES

	1938-39		1959-60	
	Queensland	Total Six States	Queensland	Total Six States
	£	£	£	£
Income Tax Collections (Gross)	5,608,603	29,817,236	36,375,000	244,500,000
Financial Assistant (Act No. 76 of 1959) .. .. .	..	2,020,000	..	8,326,000
Special Grants (Section 96) .. .. .	..	..	..	..
Under Financial Agreement—				
Contribution towards Interest on State Debts	1,096,235	7,584,912	1,096,235	7,584,908
Contribution towards Sinking Fund on State Debts	195,454	1,477,976	743,847	5,942,433
Federal Aid Roads and Works—Grants for—				
Commonwealth Aid Roads—Grants to States (Act No. 39 of 1959) .. .. .	..	..	7,700,057	42,253,715
Grants to States (Act 1954-1956) .. .. .	..	..	320,789	1,669,211
Local Public Works—Grants for	14,450	100,000	..	..
Grants to Universities .. .. .	..	..	865,804	7,627,623
Coal Mining Industry—Long Service Leave .. .. .	..	..	66,219	484,012
Encouragement of Meat Production .. .. .	..	..	5,971	5,971
Western Australia Waterworks .. .. .	..	..	..	..
Mental Institutions—Contribution to Capital Expenditure .. .. .	..	..	74,613	1,147,472
Tuberculosis Act, 1948—Reimbursement of Capital Expenditure .. .. .	..	..	371,885	781,089
Contribution—Port Augusta—Port Pirie Railway Agreement .. .. .	..	20,000	..	..
Development of Northern Western Australia .. .. .	..	..	..	484,151
	7,729,654	45,286,680	47,620,420	321,415,126
Other Payments to States—				
National Health Campaign .. .. .	..	5,700	..	..
Medical Research	3,304	28,250	..	..
Grants for other Research	4,200	30,000	..	..
National Welfare Fund—				
Public Hospitals Benefits .. .. .	..	..	1,327,000*	6,966,239
Tuberculosis Benefits .. .. .	..	..	545,679	4,298,846
Pharmaceutical Benefits .. .. .	..	..	n.a.	n.a.
Nutrition of Children .. .. .	..	..	n.a.	n.a.
Free Issue of Poliomyelitis Vaccine .. .. .	..	..	n.a.	n.a.
Free Issue of Other Prophylactic Materials .. .. .	..	..	n.a.	n.a.
Commonwealth and State Housing Agreement—Contribution to rental losses .. .. .	..	..	n.a.	n.a.
Cattle Tick Control	34,725	69,450	..	477,059
Dairy Industry—				
Extension Grant .. .. .	..	..	65,000	247,338
Drought Relief .. .. .	..	..	190	190
Food Production—Expansion of Agricultural Advisory Services .. .. .	..	..	47,450	217,684
Contribution to Bush Fire Relief Funds .. .. .	..	19,000	..	35,508
Flood and Cyclone Relief .. .. .	..	..	127,481	127,481
Tobacco Investigation	2,500	10,000	..	..
Railway Standardisation .. .. .	..	..	..	3,723,220
	44,729	162,400	2,112,800	16,093,565
Other Payments for Assistance to Primary Producers—				
Assistant to Wheat Industry	70,824	1,756,732	..	..
Special payment during operation of Flour Tax .. .. .	..	51,961	..	..
Gold Mining Industry Assistance .. .. .	..	..	2,971	778,246
Bounties—				
Cotton	115,012	115,012	214,456	214,456
Iron and Steel Products .. .. .	..	23,049	..	..
Sulphur .. .. .	..	87,575	..	..
Sulphuric Acid .. .. .	..	..	51,506	1,480,638
Wine Export .. .. .	..	167,872	..	..
Apple and Pear .. .. .	..	529	..	..
Citrus Fruits .. .. .	..	9,904	..	..
Prunes .. .. .	..	29	..	..
Tractor .. .. .	..	..	..	621,212
Flax Fibre .. .. .	..	..	..	82,676
Rayon Yarn .. .. .	..	..	..	71,500
Cellulose acetate flake .. .. .	..	..	170,379	128,382
Copper .. .. .	..	..	..	400,503
Apple and Pear Research	929	10,000	..	..
Pearl Shell Industry—Assistance to .. .. .	..	5,300	..	..
Artificial Fertiliser Subsidy	19,020	206,020	..	..
Training of Dairy Factory Operative .. .. .	..	550	..	..
Farmers' Debts Adjustment	300,000	2,000,000	..	..
Dairy Industry Subsidy .. .. .	..	..	2,700,000	13,500,000
	505,785	4,434,533	3,139,312	17,277,613
Works and Other Purposes—				
States Grants Act, 1939—Youth Employment	25,000	200,000	..	..
Total	8,305,168	50,083,613	52,872,532	354,786,304
Consolidated Revenue Fund	8,005,168	48,083,613	52,872,532	354,786,304
Loan Fund	300,000	2,000,000	..	..
Percentage—Queensland to Total Grants .. .. .	..	..	..	..
Population .. .. .	..	..	..	..

n.a. Not available.

* Excludes £7,023 paid in Northern Territory.

APPENDIX B—DETAILS ON INDUSTRIAL SECTORS IN QUEENSLAND

TREATMENT OF NON-METALLIFEROUS MINE AND QUARRY PRODUCTS AND BRICKS, POTTERY, GLASS, &c.

	No. of Establishments	Workers	Value of Output (£'000)
(i) Production (1958-59) by factories—			
Lime, plaster of Paris, asphalt ..	15	140	676
Fibrous plaster and products ..	17	102	262
Marble, slate, &c. ..	16	289	535
Cement (Portland) and cement goods ..	45	993	5,545
Asbestos cement sheets and mouldings ..	4		
Coke works ..	1		
Others ..	2	438	2,200
Total ..	100	1,962	9,218
Bricks and tiles ..	27	604	1,313
Earthenware, china, &c. ..	16	374	773
Glass ..	13	348	1,632
Total ..	56	1,326	3,718

(ii) Principal Products (1958-59)—		£
Bricks ..	62,890 thousand	1,036,431
Pipes and fittings (earthenware) ..		527,934
Tiles and pottery ..		417,892
Agricultural lime ..	13,483 tons	60,252 (1957-58)
Quick lime ..	19,343 tons	129,628
Fibrous plaster sheets ..	676 thousand sq. yd.	282,645 (1957-58)
Fibrous goods (including mouldings) ..		59,362 (1957-58)

	Inter-state	Over-seas	Total
(iii) Pattern of Trade, 1958-59 (£'000)—			
Production, 12,936—Imports ..	2,902	1,832	4,734
Exports ..	1,095	6,730	7,825
Apparent consumption, 9,845.			

Ratio Production/Consumption, 1.31 : 1

	Inter-state	Over-seas	Total
Principal imports (£'000)—(1957-1958)			
Portland cement ..	3	11	14
Glass ..	344	281	625
Glassware and bottles ..	339	200	539
Crockery and household ware ..	310	422	732
Other earthenware ..	685	138	823

CHEMICAL DYES, PAINTS, OILS, &c.

	No. of Establishments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Industrial and heavy chemicals and additives ..	20	350	1,766
Pharmaceutical and toilet preparations ..	126	509	
White lead, paints and varnish ..	19	309	2,703
Oils (vegetable, mineral and animal) ..	15	582	6,930
Chemical fertilisers ..	4	161	1,144
Boiling down, tallow refining ..	9	241	1,157
Soap and candles ..	8	69	458
Inks, polishes, &c. ..			
Total ..	82	1,838	14,667

(ii) Principal Products (1957-58)—		£
Bituminous emulsions ..	2,553 th. gals.	292,174
Paint and varnish resins ..	7 th. gals.	6,921
Paints and enamels ..	3,200 th. gals.	2,460,445
Pigments ..	7 th. gals.	15,643
Stains and varnishes ..	42 th. gals.	60,433
Tallow (edible) ..	192 th. cwt.	782,800
Tallow (inedible) ..	155 th. cwt.	561,285
Tar (crude) ..	2,783 th. gals.	n.a.
Thinners ..	28 th. gals.	14,433
Soap ..	143 th. cwt.	721,059
Detergents ..	26 th. cwt.	233,292
Soda crystals ..	10 th. cwt.	18,805
Carbon dioxide gas ..	755 tons	n.a.

CHEMICAL DYES, PAINTS, OILS, &c.—continued

	Inter-state	Over-seas	Total
(iii) Pattern of trade (1958-59) (£'000)—			
Production, 14,668—Imports ..	29,877	7,260	37,137
Exports ..	3,975	1,827	5,802
Apparent Consumption, 46,003.			

Ratio Production/Consumption, 0.32 : 1

	Inter-state	Over-seas	Total
Principal Imports (£'000), 1957-58—			
Pigments ..	275	234	509
Prepared paints and varnishes, dyes, thinners, &c. ..	8	1,825	1,833
Vegetable oils ..	523	124	647
Kerosene ..	309	819	1,128
Lubricating mineral oil ..	391	821	1,212
Turpentine substitutes ..		115	115
Other petroleum and shale oil ..	9,054	1,981	11,035
Oils, fats and waxes, n.e.i. ..	657	101	758
Drugs and medical preparations ..	4,424	142	4,566
Perfumery and toilet preparations ..	2,062	9	2,071
Salt ..	565	23	588
Soap and soap substitutes ..	2,286	31	2,317
Fertilisers ..	2,735	1,005	3,740
Other drugs and chemicals ..	3,773	876	4,649

Exports (£'000)—			
Pigments, paints and varnishes ..	125	67	192
Edible animal oils and fats (including edible tallow) ..	575	361	936
Tallow (inedible) ..	246	773	1,019
Lanolin and other wool oils and fats ..	2	5	7
Cotton seed oil ..	19		
Peanut oil ..	15	2	74
Other vegetable oils ..	37		
Oils, fats and waxes, n.e.i. ..	1,380	694	2,074
Drugs and medicinal preparations, perfumery and toilet preparations ..	209	3	212
Fertilisers ..	468	7	475
Other drugs and chemicals ..	711	80	791

INDUSTRIAL METALS, MACHINES AND CONVEYANCES

	No. of Establishments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Foundries (Ferrous) ..	24	862	2,073
Plant, equipment and machinery (including machine tools) ..	161	6,006	15,843
Other engineering ..	173	1,842	4,587
Extracting and refining of other metals; alloys ..	4	596	21,807
Electrical machinery, cables, and apparatus ..	69	2,069	4,828
Construction and repair of vehicles—			
Tramcars and Railway Rolling Stock ..	30	8,435	12,484
Motor Vehicles—			
Construction and Assembly ..	8	857	4,959
Repairs ..	1,154	7,852	15,089
Motor bodies ..	195	1,311	2,813
Horse-drawn vehicles ..	28	83	199
Motor accessories ..	21	362	1,026
Cycles (foot and hand driven) and accessories ..	20	100	251
Aircraft ..	4	209	458
Other ..			
Ship and boat building and repairing, marine engineering ..	34	1,411	2,903
Cutlery and small hand tools ..	9	53	92
Agricultural machines and implements ..	49	1,353	2,864
Non-ferrous metals, founding casting, &c. ..	27	483	1,364
Galvanised ironworking and tinsmithing ..	74	1,483	7,624
Pipes, tubes and fittings (ferrous) ..	27	536	1,661
Wire and wireworking (including nails) ..	8	496	1,155
Stoves, ovens and ranges ..	3	51	
Gas fittings and meters ..			
Sewing machines ..	5	28	103
Arms, ammunition (excluding explosives) ..	15	123	287
Wireless and amplifying apparatus ..	22	467	790
Other metal works ..			
Total ..	2,164	37,068	105,260

INDUSTRIAL METALS, MACHINES AND CONVEYANCES—continued

	Number	Value (£)
(ii) Principal products (1957-58)—		
Motor bodies—		
Made, built and assembled from		
Australian panels—		
Truck bodies—trays	658	926,844
tipper	249	
From imported panels—		
Car bodies	3,313	
Utility bodies	587	
Cycles, complete—made or assembled ..	9,739	n.a.
Agricultural implements made or assembled—		
Cultivators, scarifiers	796	95,317
Harrows	199	5,020
Harvesters and reapers thrashers ..	77	35,893
Hay rakes	235	1,822
Planters	476	48,659
Ploughs	383	36,392
Dozers	137	59,995
Rippers and rooters	22	8,345
Milk buckets	1,140	663
Nails	2,688 tons	250,410
Steel—fabricated	10,793	1,441,318
Trailers	186	26,024
Semi-trailers	192	245,123
Bath heaters—electric	1,628	28,078
Baths—metal	469	2,046
Batteries—wet cell—		
S.L.I. including motor cycle ..	29,653	155,469
Radio, &c.	9,706	26,989
	(2-volt cells)	
Coppers—wash boilers—electric boilers	3,954	45,370
—other	187	763
Water heating systems—		
Electric	15,144	489,546
Solid fuel	2,903	53,451
Water softeners	2,378	60,426
Radiogram cabinets	9,205	177,498
Mattresses, woven wire, link mesh and spring	105,157	782,897
Folding beds	4,120	13,553

	Inter-state	Over-seas	Total
(iii) Pattern of trade, 1958-59 (£'000)—			
Production, 105,257—Imports	77,307	18,460	95,767
Exports	18,105	13,707	31,812
Apparent Consumption, 169,212.			

Production/Consumption ratio, 0.62 : 1

	Inter-state	Over-seas	Total
1957-58 Imports (£'000)—			
Metals and metal manufactures—			
Non-ferrous metals	1,364	46	1,410
Motor vehicles and parts	19,118	5,353	24,471
Cycles and motor cycles and parts ..	238	328	566
Railway and tramway vehicles			
(including trolley buses)	108	12	120
Hardware—building and engineering ..	2,590	53	2,643
Kitchenware	862	51	913
Heating and cooking appliances (not electric)	550	71	621
Hand tools	657	390	1,047
Hardware—haberdashery (fasteners, pins, &c.)	527	16	543
Metal manufactures, n.e.i. (except machinery and electrical appliances) ..	1,115	3,225	4,340
Dynamo and electrical machinery, &c.—			
Electric wire and cable	1,892	80	1,972
Radios and radio grams and parts ..	2,073	20	2,093
Telegraph and telephone instruments and appliances	38	491	529
Heating and cooking appliances, electrical including irons	846	42	888
Other electrical appliances and machinery	4,921	1,567	6,488
Machines and machinery (except dynamo and electrical)—			
Internal combustion engines	597	527	1,124
Tractors and parts	3,653	4,409	8,062
Locomotives and parts	201	240	441
Household machines (including refrigerators and electric fans) ..	5,138	115	5,253
Agricultural, horticultural, dairying, &c., machinery and implements, (including parts)	3,760	484	4,244
Machine tools	333	166	499
Other machinery	4,998	3,632	8,630
Exports (£'000)—			
Metals and metal manufactures—			
Copper-blisters, ingot, scrap, &c. ..	7,021	3,199	10,220
Zinc and spelter in metallic form and matts	1		1
Lead in metallic form and matts	42	5,658	5,100
Other metal	589	893	1,482
Hardware (including kitchenware, hand tools and haberdashery)	1,000	39	1,039
Railways and tramway vehicles	343	637	980
Motor vehicles, motor cycles, cycles and parts	2,817	46	2,863
Other metal manufactures	1,367	791	2,158
Dynamo electrical machinery and electrical appliances and equipment ..	1,056	77	1,133
Machines and machinery—			
Household machines	216	15	231
Agricultural, horticultural, dairying, &c., machinery and implements, (including parts)	593	28	621
Machine tools	45	2	47
Other machinery	1,562	553	2,115

TEXTILES AND TEXTILE GOODS (NOT DRESS)

	No. of Estab-ments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Cotton spinning	4	246	675
Cotton spinning and weaving	4	920	2,619
Wool-carding, spinning, weaving			
Rayon, nylon and other synthetic fibres	3	147	263
Rope and cordage			
Canvas goods, tents, tarpaulins, &c. ..	13	234	964
Bags and sacks			
Textile printing, &c.			
Total	24	1,547	4,521

		£
(ii) Principal Products (1958-59)—		
Bags textile	153,239	120,043 (1957-58)
Blankets	12,746 pr.	36,677
Woollen cloth	1,631,139 sq. yd.	882,389

	Inter-state	Over-seas	Total
(iii) Pattern of Trade (1958-59) (£'000)—			
Production, 4,520—Imports	11,041	6,573	17,614
Exports	2,674	119	2,793
Apparent consumption, 19,341.			

Ratio Production/Consumption, 0.23 : 1

	Inter-state	Over-seas	Total
1957-58 Principal imports (£'000)—			
Yarns (all kinds)	267	193	460
Sewing and embroidery, silks and cottons	200	204	404
Cordage and twines and manufactures ..	470	48	518
Bags and sacks	47	760	807
Wool packs	180	251	431
Other	89	34	123
Blankets and blanketing	444	30	474
Towels and towelling	393	113	506
Piece goods	5,596	4,045	9,641
Linoleum	472	363	835
Carpets and carpeting	487	225	712
Other floor coverings	151	7	158
Textiles, n.e.i.	2,133	164	2,297
Exports (£'000)—			
Yarns and manufactured fibres	466	40	506
Blankets and blanketing	11		11
Piece goods—wool	819		819
other	215	12	227
Textiles, n.e.i.	974	19	993

SKINS AND LEATHER (NOT CLOTHING)

	No. of Estab-ments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Furriers and Fur-dressing	4	28	26
Woolscouring and Fellmongery	9	216	1,160
Tanning, Currying and Leather Dressing			
Saddlery, Harness and Whips	13	565	2,596
Machine belting (Leather or other)	11	128	229
Bags, trunks and other goods of leather and leather substitutes	16	218	470
Boots and shoes (not rubber)	27	1,086	2,146
Boot and shoe repairing	118	313	417
Total	198	2,554	7,044

		£
(ii) Principal products, 1958-59—		
Sole leather	5,922 lb. lb.	897,559
Upper leather	8,772 lb. sq. ft.	1,258,146
Dressed leather for skins	892 lb. sq. ft.	122,845
School bags, bags and cases	19,938	53,462 (1957-58)
Saddles	2,195	62,604 (1957-58)
Boots, shoes and sandals	1,129,703 pairs	1,901,017
Slippers	294,908 pairs	218,005

	Inter-state	Over-seas	Total
(iii) Pattern of Trade, 1958-59 (£'000)—			
Production, 7,044—Imports	440	23	463
Exports	969	460	1,429
Apparent consumption, 6,078.			

Ratio Production/Consumption, 1.16 : 1

APPAREL

	No. of Estab- ments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Tailoring and ready-made clothing	117	2,054	2,975
Waterproof and oilskin clothing	57	1,167	1,743
Dressmaking, hemstitching	13	314	527
Millinery	23	1,091	1,415
Shirts, collars and underclothing	3	174	346
Foundation garments	3	44	
Hats and caps	4	77	229
Boot and shoe accessories	167	1,467	1,877
Umbrellas and walking sticks	4	588	2,158
Dyeworks and cleaning			
Hosiery and other knitted goods			
Total	391	6,976	11,270

(ii) Principal products (1957-58)—		£
Hats and caps	30,698	..
Infants' bonnets	1,753	..
Pyjamas	10,476 doz.	..
Nightdresses	4,889	..
Rugs	607	1,429
Rugs for horses, &c.	2,236	11,127
Sheets	40,470	..
Singlets	29,662	..

	Inter- state	Over- seas	Total
(iii) Pattern of Trade, 1958-59 (£'000)—			
Production, 11,269—Imports	17,658	338	17,988
Exports	2,958	86	3,044
Apparent consumption, 26,213			

Ratio Production/Consumption, 0.43 : 1

FOOD, DRINK AND TOBACCO

	No. of Estab- ments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Flour milling	12	536	6,673
Cereal Foods and starch	10	254	930
Animal and bird foods	15	213	2,214
Bakeries (including cakes and pastry)	527	2,505	8,705
Biscuits	4	854	2,665
Sugar mills	31	6,621	60,460
Sugar refineries and distilleries	6	517	7,326
Confectionery (including chocolate and icing sugar)	20	175	526
Jam, fruit and vegetable canning	14	1,568	8,461
Pickles, sauces and vinegar	5	43	153
Bacon curing	9	1,660	11,038
Butter factories	50	1,203	20,007
Cheese factories	25	286	2,434
Condensed and dried milk	3	136	1,437
Margarine	3	260	2,603
Meat and fish preserving	35	7,274	61,079
Condiments, coffee, spices	17	407	2,381
Ice and refrigerating	67	414	923
Aerated waters, cordials, &c.	164	922	3,153
Breweries	6	853	4,998
Ice cream	6	379	1,952
Arrowroot	6	24	28
Peanuts—ginning and products	10	539	3,349
Other (salt, sausage skins, ginger, wine making and maling, tobacco, cigars, &c.)	14	163	540
Total	1,059	27,806	214,035

(ii) Principal products (1958-59)—		£
(a) Non animal—		
Flour	142,553 ton	4,997,854
Flour self raising	..	594,152 (1957-58)
Wheatmeal	8,786	308,978
Wheat germ	503 th. ton	16,628 (1957-58)
Wheatmeal granulated	263 sh. ton	9,249 (1957-58)
Bran and pollard	53,149 ton	163,723
Cereal meal	94,249 cwt.	n.a. (1957-58)
Bread	222,034 th. lb.	6,595,247
Biscuits	21,850 th. lb.	2,309,896
Cakes, pastry, &c.	..	2,315,031
Arrowroot	288 tons	30,405 (1957-58)
Raw sugar	1,353,547 tons	59,795,231
Fruit preserves—		
Liquid—		
Pineapple	65,667 th. lb.	4,145,337
Other	21,474,961 lb.	1,655,974
Fruit juices	2,389 th. gal.	743,660 (1957-58)
Cordials and syrups—		
Fruit juice based	479 th. gal.	348,695 (1957-58)
Flavoured imitation	241 th. gal.	161,903 (1957-58)
Essences and flavourings	39 th. gal.	n.a. (1957-58)
Jam	9,728 th. lb.	790,374
Jelly crystals, cubes, &c.	1,421 th. lb.	167,219 (1957-58)
Ice cream cones and wafers	391 th. lb.	50,194 (1957-58)
Water ices and sherbert	65 th. lb.	45,259 (1957-58)
Margarine	10,572 th. lb.	1,093,688 (1957-58)
Puddings and desserts (dry)	482 th. lb.	45,636 (1957-58)
Sauces	1,195 th. lb.	133,627 (1957-58)
Soups (dry mix)	74 th. lb.	10,847 (1957-58)
Vegetables preserved	274 th. lb.	20,933 (1957-58)
Vinegar or substitute—		
Bottled	87 th. gal.	31,131 (1957-58)
Bulk	138 th. gal.	45,442 (1957-58)
Beer	26,695 th. gal.	4,948,821
Aerated water	10,893 th. gal.	2,798,869

FOOD, DRINK AND TOBACCO—continued

(b) Animal (1958-59)—		£
Butter	91,889 th. lb.	17,668,957*
Cheese	18,412 th. lb.	2,037,688*
Ice cream	2,883 th. gal.	1,564,734 (1957-58)
Beef	465,597 th. lb.	40,734,804
Veal	17,623 th. lb.	1,654,066
Mutton	25,849 th. lb.	1,284,504
Lamb	7,109 th. lb.	665,892
Pork	13,066 th. lb.	1,751,594
Bacon and Ham	15,482 th. lb.	3,444,722
Canned meat	59,679 th. lb.	8,972,901
Hides and skins	2,432 th. lb.	3,376,512
Tallow	25,383 tons	1,930,348
Wool, scoured or carbonised	11,132 th. lb.	5,576,520
Edible fats—dripping	179,526 cwt.	887,643 (1957-58)
Lard	25,774 cwt.	205,313 (1957-58)
Meat extracts, &c.	679 th. lb.	739,560 (1957-58)
Powdered milk	1,260 th. lb.	38,184 (1957-58)
Sausage casings	14,173 cwt.	261,584 (1957-58)
Fish (edible)	n.a.	1,219,000 (1957-58)

* Including subsidy

	Inter- state	Over- seas	Total
(iii) Pattern of Trade, 1958-59 (£'000)—			
Production, 214,036—Imports	29,520	3,522	33,042
Exports	49,755	95,772	145,527
Apparent consumption, 101, 551			

Production/Consumption ratio, 2.11 : 1

1957-58 Principal imports (£'000)—			
Foodstuffs of vegetable origin—			
Wheat	1,835	..	1,835
Other grains, unprepared	245	..	..
Rice cleaned	234	1	1,385
Breakfast cereals, &c.	257	..	..
Other grains prepared or manufactured	648	..	..
Biscuits	214	8	222
Onions, fresh	32	..	32
Potato, fresh	413	..	413
Other fresh vegetables	599	..	599
Vegetables preserved in liquid or pulped	952	3	955
Apples, fresh	916	..	916
Citrus fruits, fresh	445	..	445
Other fresh fruits	928	..	928
Dates	19	34	53
Raisins and Currants	222	..	222
Other fruit, dried or evaporated	188	..	188
Fruits preserved in liquid or pulp	652	2	654
Jams and jellies	251	11	262
Coffee and Chicory	302	9	141
Tea	..	1,586	1,595
Cocoa and chocolate	500	1	501
Confectionery	2,315	8	2,323
Sago and Tapioca	9	13	22
Hops	173	8	181
Hay, chaff and prepared animal or bird foods	240	98	338
Other foodstuffs of vegetable origin and non-alcoholic beverages	2,771	328	3,099
Foodstuffs of animal origin—			
Meat, poultry game and soup—fresh, preserved by cold process, dried or cured	396	..	396
Meat, poultry, game and soup—preserved in tins	380	1	381
Milk and cream, preserved, condensed, or dried	1,378	..	1,378
Infants and invalids foods	400	2	402
Fish, fresh and preserved by cold process	17	71	88
Fish, smoked, dried or salted	3	77	80
Fish preserved in tins or air tight vessels	297	520	817
Other foodstuffs of animal origin	517	370	887
Spirituous and alcoholic liquors—			
Ale, beer and porter	1,163	6	1,169
Wine and spirits	119	106	1,225
Tobacco—			
Tobacco unmanufactured	515	29	544
Tobacco manufactured, n.e.i.	2,527	6	2,533
Cigarettes	5,083	21	5,104
Cigars	106	1	107
Live animals	3,513	2	3,515
Animal substances, not foodstuffs (e.g. greasy wool, scoured wool, &c.)	4,831	135	4,967
Vegetable substances and fibres (e.g. seeds and oil nuts)	1,485	543	2,028
Exports (£'000)			
Foodstuffs of vegetable origin—			
Flour wheat	533	126	659
Flour, other	17	..	17
Wheat	222	..	222
Maize	60	27	87
Millet and panicum	142	409	551
Sorghum	43	..	43
Other grains unprepared	47	1	48
Pumpkins and marrows, fresh	293	..	293
Tomatoes, fresh	463	..	463
Beans, fresh	925	..	925
Other fresh vegetables	755	16	771
Bananas, fresh	227	..	227
Pineapple, fresh	632	1	633
Citrus fruit, fresh	137	14	151
Other fresh fruits	691	48	739
Fruits, dried and evaporated	37	..	37
Pineapples preserved in liquor or pulped	1,762	924	2,686
Other fruits preserved in liquor or pulped	802	24	826
Peanuts, including paste	1,102	..	1,102
Sugar, raw or refined	24,056	34,657	58,713
Other foodstuffs of vegetable origin	1,887	408	2,295
Spirituous and alcoholic liquors	106	..	106
Tobacco unmanufactured	2,992	47	3,039
Tobacco manufactures, cigarettes and cigars	606	33	639
Live animals	9,411	539	9,950
Foodstuffs of animal origin—			
Beef and veal, fresh or preserved by cold process	1,519	14,624	16,143
Mutton and lamb, fresh or preserved by cold process	1	38	39

FOOD, DRINK AND TOBACCO—continued

	Inter-state	Over-seas	Total
Exports (£'000)—continued			
Pork, fresh or preserved by cold process	125	80	205
Other meat, poultry, game and soup	104	1,122	1,226
Bacon and ham	852	84	936
Meat, poultry, game and soup—in tins or airtight vessels	1,194	6,125	7,319
Sausage casings	69	36	105
Butter	2,151	3,118	5,269
Cheese	428	108	536
Eggs in shell	102	102	204
Eggs not in shell	44	44	88
Honey	2	57	59
Other foodstuffs of animal origin	802	1,136	1,938
Animal substances not foodstuffs—			
Furred skins	214	9	223
Cattle hides and calf skins	554	1,147	1,701
Sheep skins and lamb skins	13	905	918
Greasy wool	717	62,215	62,932
Scoured wool, &c.	8	4,673	4,681
Other animal substances	257	644	901
Vegetable substances and fibres	643	252	895

SAWMILLS, JOINERY, BOXES, &c., WOOD TURNING AND CARVING, FURNITURE OF WOOD, BEDDING, &c.

	No. of Establishments	Workers	Value of Output (£'000's)
(i) Production (1958-59)—			
Sawmills	557	6,718	18,088
Plywood mills (including veneers)	29	1,860	6,467
Joinery	114	1,351	3,814
Cooperage	6	64	149
Boxes and cases	57	407	1,103
Woodturning, woodcarving, &c.	26	164	425
Basketware and wickerware	6	42	61
Perambulators	6	203	1,049
Others	232	2,273	5,178
Cabinet and furniture making			
Total	1,033	13,082	36,334

(ii) Principal products (1957-58)—		£
Boxes and cases	4,143 th.	640,862
Casks and boxes	16 th.	120,556
Corestock	6,021	693,272
Floor boards	19,417	1,374,493
Axe handles	1,635 gross	51,790
Broom handles	3,256 gross	15,657
Palings	380	10,681
Pickets	29	1,045
Sleepers	25,274	629,473
Timber from logs (local)	268,200	n.a.
Timber from logs (imported)	7,520	n.a.
Timber dressed	20,649	1,959,583
Timber kiln driers	20,696	n.a.
Plywood	131,206	4,730,235
Veneers used in production	293,011 th. sq. ft.	n.a.
Veneers sold or stock	100,273 th. sq. ft.	594,376
Weather boards	4,778	313,343

	Inter-state	Over-seas	Total
(iii) Pattern of trade, 1958-59—			
Production, 36,332—Imports	439	877	1,316
Exports	5,299	299	5,598
Apparent consumption, 32,050.			
Ratio Production/Consumption 1:1:3:1			
Imports (1957-58)—			
Logs	17	319	336
Timber, undressed and dressed	181	269	450
Furniture and wicker manufactures	325	222	547
Exports (1957-58)—			
Logs	13	29	42
Timber undressed and dressed	567	77	643
Veneer	242	53	295
Plywood	3,773	45	3,818
Furniture and wicker manufactures	578	19	597

PAPER, STATIONERY, PRINTING, BOOKBINDING, &c.

	No. of Establishments	Workers	Value of Output (£'000's)
(i) Production (1958-59)—			
Newspapers and Periodicals	58	2,290	7,269
General Printing	114	2,420	4,852
Manufactured stationery	5	223	751
Stereotyping and Electrotyping	5	37	87
Process and Photo-engraving	6	75	133
Cardboard Boxes, Cartons and Containers	6	427	2,710
Paper bags	8	129	735
Paper making (including cardboard)	6	362	2,029
Other			
Total	206	5,963	18,566

PAPER, STATIONERY, PRINTING, BOOKBINDING &c.—continued

	Inter-state	Over-seas	Total
(ii) Pattern of trade (1958-59)—			
Production, 18,566—Imports	6,332	3,442	9,774
Exports	1,163	72	1,235
Apparent Consumption, 27,105.			
Ratio Production/Consumption, 0.68:1			
Imports (1957-58)—			
Pulp, paper and board—			
Paper (printing and writing)	1,364	1,717	3,081
Paper (wrapping, &c.), paper board and pulp	1,699	665	2,364
Paper manufactures and stationery	2,745	929	3,674
Exports (1958-59)—			
Pulp, paper and board	302	23	325
Paper manufactures and stationery	383	28	411

RUBBER

	No. of Establishments	Workers	Value of Output (£'000)
(i) Production (1958-59)—			
Rubber goods (including tyres made)	14	1,136	4,875
Tyre re-treading and Repairing	79	640	1,859
Total	93	1,776	6,734

(ii) Principal products (1957-58)—		£
Rubber mattresses	7,927	138,207
Tyres retreaded and recapped	306,699	1,451,557

	Inter-state	Over-seas	Total
(iii) Pattern of trade, 1958-59 (£'000)—			
Production, 6,734—Imports	5,180	1,220	6,400
Exports	2,790	42	2,832
Apparent consumption, 10,302.			
Ratio Production/Consumption, 0.65:1			
1957-58 Principal imports (£'000)—			
Rubber tyres and tubes	4,032	203	4,235
Other rubber manufactures (not apparel)	1,550	189	1,739
Rubber unmanufactured	117	924	1,041

OTHER PRODUCTS

	No. of Establishments	Workers	Value of Output (£'000's)
(i) Production (1958-59) by factories—			
Jewellery, watches and clocks	24	159	219
Electroplating (Gold, silver, chrome, &c.)	18	138	209
Pianos, piano-players, organs	5	50	62
Other musical instruments	3	10	22
Plastic moulding and products	6	75	284
Brooms and brushes	10	141	155
Opticians' instruments and appliances	16	201	330
Photographic materials			
Surgical and other scientific instruments and appliances	14	90	168
Toys, games and sports requisites	6	53	113
Other	8	40	95

PART III.—THE SELECTION OF SECONDARY INDUSTRIES

1. CONSIDERATION OF THE NEED TO DEVELOP SECONDARY INDUSTRY

The basic relationship between Queensland and the more industrialised centres of Australia to the south, on the one hand, and industrialised countries overseas on the other, is one which is by no means without parallel. This triangular pattern of trade is at least as common as the more direct bilateral relationship between a manufacturing country and a primary producer, and has in fact been an important feature of the development of the whole sterling area. There are however several features which are more peculiar to the Queensland situation. Thus although it could be suggested that the industrialised centres of New South Wales and Victoria have secured a position in relation to Queensland similar to that held by the United Kingdom in relation to the rest of the sterling area, this would be an over-simplification. It is true that New South Wales and Victoria have the greater part of Australian manufacturing industry and that Queensland affords a market for the products of large-scale industry in the south. But as far as international trade is concerned, Australia as a whole is still predominantly a supplier of primary produce, and both New South Wales and Victoria are still substantial producers of raw materials and foodstuffs.

Queensland's exports of primary produce overseas are more than ample to cover its import requirements from overseas. This is not so much because consumption per head is lower than in the other States as that its whole economic structure is at present less complex. The present differences between the standard of living in Queensland and New South Wales and Victoria, in particular, should not be exaggerated and are possibly no greater than those existing between various parts of the latter two States. As far as standard of living is concerned, Queensland is already a developed economy. The big difference between Queensland and the south is in the state of development of natural resources and the state of development and needs of secondary industry. The bulk of Queensland's import requirements of manufactured products are at present capable of being met from large scale industry in the south. New South Wales and Victoria are less self-sufficient in an Australian sense because of the concentration of population around the State capitals and the greater degree of specialisation, and because the needs of industry for raw materials and capital are much greater. As Australian manufacturing industry develops further so the pattern of trade is likely to become more complex, and it is possible, in line with world trends, that there will be a greater direct exchange of goods between manufacturing centres in Australia and overseas.

Because of the distances involved and the comparative isolation of parts of the State, Queensland's development problems have aspects similar to those of entire countries elsewhere. The problem of regional and rational development are in fact closely related. Where they do differ is in the freedom of movement of labour, the freedom of trade and, as a result, in the manner in which solutions to the problems can be tackled. Although distances are great, it is possible to argue, for the point of view of Brisbane, for example, that they are not great enough; that transport costs do not constitute a sufficient barrier to the movement of certain classes of goods from the south. This raises the question of spheres of influence. It is of course extremely difficult to determine precisely the spheres of influence of the largest industrial centres. This is particularly difficult in Australia because of the existence of tapering freight rates, the peculiarities of shipping conference rates and the policy of uniform capital city pricing. Areas near to large expanding industrial centres are likely nevertheless to benefit economically at least from secondary effects; those further afield, but not too remote, may benefit in certain respects initially but eventually, depending upon the circumstances, suffer from more adverse effects. Further afield still there will be areas (such as, for example, Perth in Western Australia) which are remote enough to develop on more independent lines. This latter development will, of course, be limited by the size of the market, and it is likely that certain classes of goods will be comparatively expensive, but there is the possibility of a wider range of secondary industry at least being started.

The establishment of secondary industry is not, of course, an end in itself, despite the existence of an increased number of examples of secondary industries which have been established in various parts of the world without any precise assessments having been made of the real benefits which are likely to accrue. These benefits are largely seen as opportunities for the greater employment of labour, and as a means of maintaining and/or attracting a larger population. Throughout the world there is a general tendency for there to be a concentration of population in large towns. This is not just a question of there being concentration of increased population but, in many places, actual rural depopulation. It is quite natural therefore that rural centres (and, in certain parts of the world, old centres of declining industries) should want at least to maintain their relative positions. In some

instances the movement of population away from the land arises merely from the fact that under existing conditions of agriculture, for example, the land cannot support any increase in population; in others the movement arises from increased specialisation and changes in land use, or increased output of existing primary products per head, so that less labour is required on the land; in yet others it is merely that urban life in general offers more attractions. In the case of Queensland, no one could maintain that the land was fully developed and not capable of supporting a much increased population, although there have been cases where specialised forms of agriculture have declined because of difficult marketing conditions, and, of course, certain centres have declined as nearby mines have become uneconomic. The reasons why Queensland does not at present support a larger population engaged in primary production would appear to include the following:—

- (a) Shortage of capital for such things as the clearing and improvement of land, public works (e.g. roads and dams) and the proving of mineral resources.
- (b) Lack of adequate technical facilities for the examination of specific projects and the determination of optimum land use.
- (c) Marketing problems, because of the distances involved and the difficulties of anticipating changes in market conditions.
- (d) The apparently greater benefits of urban life, enhanced by the fact that immigrants come largely from industrialised communities.
- (e) Lack of knowledge on the part of immigrants concerning conditions in tropical Australia and the fact that the temperate parts of Australia were quite naturally developed first in the days when individual pioneering was considered more of a necessity.

It can be seen immediately that these problems are all inter-related and that the solution of one is not possible without the solution of the others. None of them are insurmountable, but at the present day would appear only capable of solution by the intervention of governments or of other large concerns who have sufficient resources and are prepared to take some risk. The numbers of individuals in Australia or among immigrants who consider it necessary to undertake pioneering in this day and age are relatively small. This is fortunate when one considers that pioneering was in the past very often not entirely from choice. It does however present difficulties in an era when the world is divided into states with a high standard of living on the one hand and countries of low subsistence on the other.

The development of secondary industry in Queensland has so far been very closely linked with that of primary production. There can be no doubt that the demand for primary products will increase in the long run, due to the increase in world population and in the living standards of those at present near subsistence levels in particular. This will be true even though the countries with low standards of living, which are at present trying to develop their own secondary industries, are likely to suffer from balance of payments difficulties. The population increases will not however be confined to countries with low standards of living, although the type and quality of the primary products required by the older manufacturing countries will be different. The increased output of primary products would continue to assist the development of secondary industries. In the first place there would be more foodstuffs and raw materials requiring processing in some form. Secondly, earnings from and the greater exploitation of primary production would expand the market for capital and consumer goods. Lastly, the building of roads and similar facilities would benefit secondary industries as well as stimulate a direct demand for some of their products. The danger in relying too heavily upon primary production, however, arises from the short and medium term vagaries of the market and incalculable effects of weather. Raw materials for industry are likely to reflect fluctuations in demand for finished goods, because of changes in stocks, in a greatly exaggerated form. There is a reasonably stable demand for foodstuffs, but efforts to meet this demand are very often nullified by adverse weather conditions or exaggerated by favourable ones. The supply of most primary products in the short run is relatively inelastic (i.e. slow in responding to price changes) so that prices can fluctuate violently. National and international marketing arrangements (i.e. price agreements and stocking schemes) are of assistance, but these rarely ensure stability of incomes, and it is no accident that it is the Australian States relying mostly heavily on primary production which show the greatest variations in income from year to year.

The prices of manufactured products do not fluctuate so widely as those of primary products in the short term, because they embody a greater element of labour, because the supply is not so inelastic (there are important exceptions

to this) and because manufacturers have a greater control over their marketing. Over the longer period prices of manufactured goods have risen as overall demand has increased, whereas those of primary products have very often been kept artificially low by the nature of government or inter-government action which has been designed to eliminate short-term fluctuations. Secondary industry is not however without problems of its own. Because prices do not change so much, the level of employment of labour and facilities is liable to fluctuate more, and certain sectors, such as capital goods and consumer durable goods, have their own elements of instability. Competition in the international markets is likely to be much more intense than it has been in the period since the war, and the rapidity of technological change calls for an increased degree of flexibility. At the same time, since industry is becoming more capital intensive, the required flexibility is becoming more difficult to achieve.

The possible benefits to Queensland from the increased development of secondary industry therefore would appear to be—

- (a) The more immediate attractiveness of secondary industry to labour (and population);
- (b) the greater stability of incomes which it affords;
- (c) the reduced dependence of the State on one aspect of economic development.

Greater self sufficiency and some reduction in the necessity to rely upon trade is an advantage which might be thought worth adding to this list. It is not however an end in itself, and usually rests on the assumption that by isolating itself from events outside, a country or region can exercise more control over its own economic affairs and be better able to stabilise incomes. The benefits to an area such as Queensland, with its present population, of full participation in trade with other States and overseas are however, such as to make only a certain degree of self-sufficiency either attainable or a reasonable objective. There are undoubtedly benefits to an area where it can specialise in the types of economic activity which it can do best and participate to the fullest possible extent in trade. Where world trade fluctuates widely, or where the demand for an area's principal products is suffering from long term decline, then obviously some attempt at diversification is essential. Without it there would be some reduction in standards of living and some loss of population. The aim, however, should be to establish, where possible, industries for which there are reasonably good prospects that they will be able to compete successfully, either on world markets or at home against free imports, and that they will only require special conditions for starting up and not for their continued existence. If protection for their continued existence is necessary then they must be high cost industries; they will have some inflationary effect and in turn again lead to some reduction in the standard of living. Some reduction in the standard of living may be regarded as a price worth paying for greater security. That very security may from time to time be threatened, however, by the effects of inflationary conditions on the area's ability to pay for imports and therefore on its balance of payments position.

The argument for a reduction in the dependence on trade becomes therefore, in the context, one in favour of reduced dependence on certain limited lines of activity—of spreading the risk. It must not of course be overlooked that there are definite advantages to be got from specialisation, in that the facilities of the area can be geared to suit particular types of activity and thus improve the competitive position of the industries involved (whether primary or secondary) and of the area. The diversification of secondary industry itself is of some benefit. If this is thought to be impossible then the secondary industries to be selected, in order to have the required stabilising effect, must be dissociated from primary production. It must be borne in mind that even some of the newer industries, such as those concerned with consumer durable goods, have their own elements of instability, and it is hardly likely that fluctuations in their levels of activity will entirely offset those affecting primary production. For "growth industries" (i.e. those likely to continue expanding at rates above average for industry as a whole) however, the fluctuations are normally of short duration and less severe than those in declining industries, so that their general effect can be to increase overall stability. The problem of seasonal as opposed to cyclical fluctuations is one which it is very difficult to counteract by introducing complementary industries, and can only really be overcome by steps to even out the supply and demand patterns of the industries directly affected.

A further argument used in favour of the setting up of secondary industry is that incomes are not only more stable, but are higher than in primary industry. Much depends upon the state of affairs in a given area, however. If there is surplus labour available in agriculture, for example, then labour productivity and incomes as a whole would be obviously increased if there were some alternative form of employment. Manufacturing activity may afford better employment opportunities and incomes for certain classes of labour, for example, for young females, but so might certain types of mining, for

example, for young males. The argument therefore has become one of employment opportunities. Productivity in manufacturing, it is true, has tended, in certain areas to rise faster than in agriculture, but this also is by no means a general rule and depends entirely upon the form and development of each and on the market situation. It is in fact the market situation (allied to the transport problem) which seems to be at the root cause of the Queensland problem. Farming has not taken in all the land which could be used because there has not been a sufficiently high and stable demand for various products, and the returns to be had have not been sufficient to cover the effort and capital cost of new ventures. In certain parts of the State this and the working out of mines has given a check to growth of activity and incomes, of more than a short-term nature. Where incomes have remained stable, and more so where they have actually declined, the process of circular causation is likely to lead to a continuous widening of the difference in levels of income between these and more favoured areas.

The question of the development of secondary industry must be seen as one of developing the whole economy. Just as the solution of many of the problems affecting the possible expansion of primary production would be of benefit to secondary industry, so the reverse is true. The development of Victoria since the war affords examples of this. There may however be occasions when the two appear to be incompatible. Thus there will be competition for capital, although, at this stage, there would appear to be a wide enough choice of multi-purpose projects which would benefit the whole community. In some places there will also be some competition for labour, and even an increased migration to some towns at the expense of others and rural areas. There are however areas in the State, which, for one reason or another (such as mines being worked out or traffic flows altered), are in any case likely to be faced with problems of re-employment. Furthermore, in a community largely dependent on primary production, unemployment figures are inadequate as a guide to labour availability.

The question of development must also be looked at from as broad a point of view as possible. Just as, for certain types of product, Brisbane may suffer from some disadvantage in being located relatively near to Sydney, so other parts of the State may suffer by comparison with the south-east area, which has the largest population and greater part of the State's secondary industry. Brisbane has a great advantage in being the State's capital. In so far as industry is not controlled from Sydney and Melbourne, it is also the State's commercial centre as well as its chief shopping centre. These factors alone ensure a minimum level of activity, and the city is now sufficiently large with a sufficiently densely populated hinterland to ensure some continuation in growth. The continued expansion of Brisbane will be of benefit to all of the south-east areas of the State (and the adjacent areas of N.S.W.) which have become economically inter-dependent. North Queensland, on the other hand, is by comparison remote from Brisbane and economically as closely associated with Sydney and the rest of the world as with the State capital. In the North, Townsville's growth has recently been very rapid, and to some extent fortuitous. The big impetus to its development has come from its position as a port for Mount Isa, and the associated copper refining. It is now becoming the chief manufacturing centre for the north and acquiring some diversification of industry. Although it has adequate flat land for development, its main advantage over other towns continues to be the impetus given to it by Mount Isa. To the north and south are towns with better agricultural hinterlands, more adequate rainfall and better natural harbours. Within one hundred miles or so of Townsville the direct benefits of the latter's development should be considerable. Further along the coast to the north and south the direct benefit is likely to be reduced, and in some cases there may even be a loss of ground. Nevertheless the general effects on the north as a whole should be favourable. Central Queensland has a more difficult problem. Rockhampton, the largest town, is nearer to Brisbane than the latter is to Sydney, and is likely to suffer, with tapering freight rates, from the full force of competition in certain fields from both. As yet there has been no exploitation of Central Queensland's natural resources with secondary effects comparable with those which have benefited Townsville. For the future, much depends upon the way in which the area's coal resources are developed. If they are used to provide cheap power, for example, the secondary and area effects will be considerable. If the coal is merely shipped elsewhere, there will be some benefit to Gladstone as a harbour and some generation of incomes, but the overall effects will be reduced. The improvement of transport facilities between Rockhampton and certain of the open-cut coalfields, even if only with the initial object of increasing coal shipments, would on the other hand help to redress some of the loss of secondary effects.

The most difficult problem in trying to encourage the growth of secondary industry is to break through the existing web of circular causation and thus increase the tempo of economic activity. This is as true of secondary industry as of primary production, of public utilities as of private enterprise. In the first place, the facilities for industry, whether transport or power, must anticipate growth, but may

inhibit it if charges are made on the basis of marginal cost, which will be high, until such time as these facilities are fully utilised. As has been amply shown, various facilities for secondary industry in Queensland have already been developed and more would be if the State was assured of securing additional secondary industry. Until such time as it does secure more secondary industry, however, the various authorities are faced with a choice of providing facilities either below optimum scale, with a unit cost higher than could be achieved, or at an optimum scale but with no immediate prospect of spreading the increased capital cost involved over a sufficient volume of business. This problem is found in many parts of Australia and there can be no doubt that an increase in population, by enabling there to be a greater utilisation of existing facilities, would result in a reduction in unit costs and give a greater return on capital in general. In the second place, with certain of the areas such as there are in Queensland, it is necessary to overcome the chain of circular causation arising from the fact that the market is too small for some types of manufacturing, and that it will continue to be so as long as there is no increase in manufacturing activity. In order to effect a breakthrough and start the process of economic expansion, what might be called the "advance", industry has to be the kind which will from its nature induce further industrial activity, or, if this is not usually the case, then it must be on a very large scale. Before considering which industries are likely to be most suited to Queensland and which are most likely to benefit from location in Queensland, brief comment must be made on the main factors at present affecting the location of industry in general.

2. The Main Factors Influencing the Location of Industry in General

These factors vary considerably in relative importance from one sector of industry to another, from one part of the world to another and over the course of time. It is usual to divide industries into those which tend to be located near supplies of fuel and power and/or raw materials, those which tend to be located near markets, and those for which locational factors are of less significance. For this division, the primary consideration is one of transport costs, but changes in manufacturing techniques, changes in economies of scale and improvements in transport facilities have all had considerable bearing on the strength of location factors and on the extent to which various industries have continued to remain successfully established in given areas.

Thus the importance of fuel requirements as a factor influencing location within a given region has to some extent been weakened by the widespread distribution of electricity and oil, and the conservation in the use of fuel in various processes. Even in the case of raw materials where bulk in relation to value is large, the economies of large scale industry are tending in many cases to outweigh the effect of transport costs, and these latter may be brought to a minimum by the installation of bulk handling facilities and location near sea-boards. It therefore becomes more difficult to maintain that, where raw material supplies are scattered, industry will be scattered and on a relatively small scale, or even that the discovery or development of extensive sources of raw materials will result in industrial location in close proximity to them.

As far as the effects of markets on location is concerned, factors such as the nature of the market (whether agricultural, industrial or general) and the nature of the product (whether easily portable and with a comparatively high value in relation to bulk) are of importance. Nevertheless, here also the economies of large scale production, together with improvements in packaging and transport, have led in many sectors to a concentration of production allied with more widespread distribution. This concentration has not however reduced the overall effect of markets on location, but has increased the importance of large centres of population (and industry) as a locational factor at the expense of smaller and more dispersed markets.

The large centres of population and industry afford a number of advantages for the establishment of new firms. In the first place, during the early stages of growth, the market is close at hand, and low transport and distribution costs enable the firm to compete with larger and more established concerns. Eventually, when the firm comes to consider selling over a wider area, it may already be of moderate size. As its output expands, lower unit costs may enable it to maintain uniform prices over this wider area, but, obviously, the fact that a fairly large proportion of its output can be sold locally is

still of some importance. In the second place, in the larger industrial centres there are more opportunities for specialisation (either in processing or in the manufacture of parts). Some new firms may aim at contributing towards this specialisation, others may want to have certain classes of work performed for them independently by other firms or merely participate in this complementary relationship from time to time, depending on the position regarding their own shop loading or until such time as they have full facilities of their own. In any developed industrial centre this question of industrial linkage, and indeed of external economies as a whole (e.g. transport and service facilities in general), can be of decisive importance.

In addition to affording large markets for consumer goods and opportunities for participation in complex and complementary relationships with industrial products and services, the large centres have of course a large and varied supply of labour. Newer firms may have to compete strongly for certain classes of labour, but, because of the attractions of the large centres to population in general, the labour supply is more likely to be on the increase than in outlying districts. There have been occasions when industry has gone in search of labour, but the overall distribution of population in industrialised countries demonstrates that, in the main, it has been the labour which has moved. It is precisely for this reason that control of the location of industry is considered essential in many parts of the world for control of the distribution of population.

It is of course realised that not all the various factors concerned are given due weight or even consideration by many firms faced with the problem of selecting a suitable area in which to establish a works. In a large number of cases, firms have merely grown up in areas where the original owners lived and the question of moving elsewhere has never arisen. Because they have survived, it might be argued that their location is the right one, but location is only one of many factors contributing towards overall efficiency. Even where an attempt has been made to choose between areas, the precise effects of differences in location on costs may have been difficult to calculate, and the choice has gone to traditional areas or has been decided on personal or even political grounds.

For this reason and because the strength of the traditional factors influencing location (particularly that of heavy industry) have been weakened, it has very often been assumed that the old influences have not been replaced by new ones and that location factors as a whole are of less importance now than they were. This has led to the belief in the increased importance of the "footloose industry," i.e. industry where location factors are of no great importance. There are certainly industrial sectors where transport costs in relation to total costs are known to be negligible, and with an increasing number of semi-finished and finished products being sold at uniform prices, which incorporate standard charges for transport, the effect of transport costs on certain individual firms may be obscured. The earlier remarks have however been intended to indicate that even though some of the traditional influences on location have been weakened, others have in many cases become of much greater significance. Furthermore, even if the decision to locate in a given area is made on the basis of a very narrow difference in hypothetical cost, or even if the decision is based on influences other than cost and availability of supplies, this in itself does not mean that firms would, without some government intervention, go to areas where industry has been declining or where industry has not been established.

It must again be stressed that, in considering the strength of the various locational factors, much depends upon the particular industry concerned. Such features as its organisation and structure, the degree of technical innovation, its relative age and development in a particular country, the optimum size of the firm and of the production unit and trends in the long-term demand for its products are all relevant. A more detailed examination does then reveal that although the general trend appears over the last few years, to have favoured concentration around a few large centres in each country, there are some disadvantages which have been sufficiently important to cause certain types of firms to look elsewhere. An increasing problem in the large centres is that of congestion. Site values tend to be high and for certain sectors of industry sites are difficult to obtain. The movement of materials, finished goods and personnel may all present difficulties. Although national wage negotiations tend to obscure differences in the demand for labour between

areas, premiums over and above agreed rates may have to be paid to certain types of worker. In some centres also where attitudes towards work have been fixed by tradition for a number of years, a break with established centres may appear necessary in order that newer manufacturing techniques may be applied. It is disadvantages such as these which have strengthened the hands of governments in trying to decentralise industry. Unfortunately it is one thing to get firms to move or establish branches one or two hours' journey away from a large town, but another and greater problem to get them to move several hundred miles away.

Many of the above general considerations are amply illustrated by developments in Australia over the last few years. The development of rail transport in Australia was largely concerned with the movement of materials to the main ports, with the return movement of finished goods, and with linking the various State capitals. The concentrations of population have therefore, from the first, been peripheral, the largest being in the areas of more temperate climate. The move towards increased industrialisation which grew from wartime necessity and subsequent Commonwealth policy quite naturally resulted in a continued concentration of industry in the main population centres, particularly those of Sydney and Melbourne. This concentration was considerably augmented by postwar immigrants who tended to favour city life. Sydney was a considerable manufacturing centre even before the war, while Melbourne's development has been particularly rapid since the war. In so far as these two centres have the bulk of Australian industry, the Commonwealth Government's measures in favour of secondary industry, although designed to benefit the country as a whole, have particularly benefited Sydney and Melbourne. Other centres, being smaller, have felt more markedly the effects of special factors such as the development of an iron and steel industry in South Australia and fuel-intensive industry in Tasmania. The development of secondary industry in Western Australia owes much to its comparative isolation, and if it is to be expanded must be closely geared to the export market. The development of road transport has led to some dispersal around main centres, but its overall effects have been to increase the degree of concentration further and, with freedom of movement across State boundaries, to benefit the two largest centres in particular.

Commonwealth Government action has of course had profound effects upon the establishment of industry in Australia. Full consideration of the precise effects of Government policy upon the Australian economy cannot however be undertaken in detail in a survey of this nature, and throughout this report it has been necessary to concentrate upon factors effecting location within Australia or the effects of Government policy upon specific industries. In general, however, it can be said that there would appear to be a growing appreciation in Australia of the need to have secondary industry which is viable on world markets, and of the fact that too great a control on competitive imports is likely to lead to too high a level of high cost production which, in turn, can have inflationary effects. As in the United Kingdom, the question of trade liberalisation is closely linked with the short-term balance of payments situation and the level of foreign exchange reserves.

3. THE SELECTION OF SECONDARY INDUSTRIES FOR QUEENSLAND

Bearing in mind what has been said about the present state of development in Queensland and, in general, about the changing influence of factors of production and markets on the location of industry, it is now necessary for a selection to be made of those industries which would appear to have the best prospects of being expanded or established in Queensland. Once again it must be stressed that the problem of industrial development cannot be isolated from that of the development of primary production and that factors likely to influence the latter will have a profound effect also upon the pattern of industry. Furthermore, with the increased pace of economic and technological development throughout the world, allied with changes in the pattern of world trade, the emphasis in any area wishing to enjoy the highest possible standard of living and to participate in world trade must be on increased flexibility in the organisation of its primary and industrial production. Although therefore it is still possible to suggest on what types of industry a given area might concentrate, it is becoming increasingly difficult to select, in detail, individual products which would appear to enjoy good prospects for more than a strictly limited period of time. This is merely to say that industrialisation is not a once-and-for-all process; that, as some sectors of industry grow, others decline, and that as new products are (and must be) developed, old ones will be abandoned.

The examination of—

- (i.) The availability of the factors of production;
- (ii.) The market and economic situation;
- (iii.) The present structure of industry in the State,

in the earlier sectors of this report, makes possible the establishment of a basis for the initial selection of secondary

industries. This basis has to start with being made as broad as possible, and consideration of each of the following main points in turn indicate possible lines for development:—

- (a) Raw materials available, particularly those which are perishable or whose value in relation to bulk is low.
- (b) Fuel intensive industries.
- (c) Industries requiring ample supplies of water.
- (d) Products for which demand is likely to be relatively high in Australia and/or in Queensland; products which have a high value in relation to bulk, or where value added is high and use can be made to the full of local skills; industries which are likely to be encouraged by the development of others (i.e. gaps in industrial organisation).

Under each of the above headings it will be possible to compile a list of industrial sectors which *a priori* appear to be of interest. Quite obviously no one point will of itself be a sufficient determinant. The relationship between the above points will have to be taken into account and each suggested industrial sector examined in greater detail. Because the field to be considered is so great, the system employed has had to be highly selective at a fairly early stage, and the determinant which must of necessity be given greatest weight at an early stage is that of the market.

Although the Government of Queensland would be anxious to encourage the development of any sector of secondary industry, the sectors most likely to be looking for new areas in which to expand are those associated with growth industries, either in an Australian or a world-wide context, and specific encouragement either of new industries or of those already established should be concentrated on those with the best growth prospects. It is these industries which will be best able to take root and survive, so that the process of encouragement and attraction by the Government will not have to be repeated, and it is these which in future are likely to afford the best employment prospects. There are however additional factors which must be borne in mind in deciding to which industrial sectors assistance should be given, if assistance with strictly limited resources is to be effective.

The main emphasis by a government such as that of Queensland, apart from ensuring that general conditions for the establishment and growth of industry in the State are as good as they can be in the context of Commonwealth economic policy, should be on starting off the process of industrial growth. Thus industries which are likely to encourage further growth and attract others should be of special interest. Many sectors of the present growth industries tend to be capital intensive—i.e. the capital employed per worker is high or, alternatively, capital costs are a significant proportion of total costs. Because they do not give immediate employment to large numbers of workers they cannot, however, be ignored, since they may have considerable secondary effects. They may thus induce associated and complementary industrial development, or increase earnings for transport and for suppliers of raw materials which, in turn, increase the level of economic activity in general.

The labour intensive industries are obviously of the greatest initial interest from the point of view of affording employment opportunities. In an economy such as that of Australia, however, in order to be competitive on world markets the trend must be away from these types of industries or at least the industries concerned must become more capital-intensive. The ratio of land to labour in Australia is high and wage rates are relatively high. To justify the latter, output per worker must either be higher in quantity or in value per unit of output. Labour, therefore, compared with that in S.E. Asia and Japan, must be capable of making the fullest possible use of capital equipment and/or be more highly skilled. Those sectors of growth industries which employ large numbers of workers, such as those concerned with the production of consumer durables, have a large throughput of materials per worker and must normally be run on a large scale. The initial capital costs of even these sectors of growth industry therefore are also high, albeit not as high per worker as in such industries as the petroleum and chemical industries, and location in relation to the possible market becomes of importance. Those sectors of growth industries which do not require large initial capital costs must increasingly become those where the total size of the market is relatively small, where the product must be tailored to suit individual requirements or where the skill involved is considerable. Whether or not the labour employed on a large or small scale in Queensland should be male or female again depends upon likely secondary effects. It would appear likely that a larger proportion of married women in Queensland would be willing to seek employment if there were suitable opportunities, and some means must be sought of arresting the drift of young females from certain parts of the State as well as that of males. It is becoming more than a little old fashioned and short-sighted to assert that the sole requirement for stabilising population is to provide employment for the father of the household.

In the case of Queensland, the objective of ensuring that the newer sectors of secondary industry, whose development it is hoped to encourage, are themselves diversified, must as yet be somewhat remote. Similarly, considerations as to the type of concern to be attracted are of no immediate interest. Obviously it would be of benefit if large firms from overseas could be encouraged to set up their principal Australian manufacturing units in the State. They will thus have a considerable stake in the future development of the State and are more likely to have the capital resources with which to expand. This makes them more attractive than small concerns or the branches of larger Australian concerns with their headquarters in other parts of Australia, but it also makes them much more difficult to attract in competition with other States.

(a) Raw materials available

The types of industry which have been established in Queensland on a wide scale for the longest period of time are those concerned with the processing of raw materials. Some form of processing has normally been essential to reduce bulk, to combat perishability or to increase portability, although the extent to which this has been necessary has varied from one product to another. It has also varied in relation to such things as distribution of supplies and to the nature of the transport facilities available. The location of the processing centres within Queensland has also been partly determined by such factors, although some towns which were previously almost entirely mining centres have developed into processing centres because the labour and transport facilities were already there, rather than because they were ideally situated for their new activities. This type of development is not of course peculiar to Queensland. Once it has happened it can be extremely difficult to alter. Where the level of activity is increasing, it may be possible to redirect some of it, but care must be taken to ensure that this does not merely result in a dispersion of effort and of resources.

The term "processing" is of course used more widely than simply to describe the initial preparation and treatment of raw materials, and the expression "processing industries" has come to be applied to such industries as prepared foods, chemicals and paper. Certain sectors of these may in fact be as remote from the original raw materials as are assembly industries, and be more subject to the influence of markets on their location.

The following *agricultural and animal products* already undergo, to some extent, processing in Queensland:—

Sugar cane	Cattle
Wheat and other grains	Sheep
Tobacco	Pigs
Cotton	Poultry
Wool	Eggs
Oil seeds	Milk
Fruit	Fish
Vegetables	

Sugar cane is the only product for which the entire output is processed in the State (up to the raw sugar stage). The small proportion of refined sugar which is produced, however, is at present normally adequate for Queensland's requirements. With the bulk of the world's sugar trade being in the raw product, because of its easier handling properties and of the continued advantages in locating refineries near large centres of consumption, it is unlikely that extra refining capacity will be installed until such time as the State's population has substantially increased. Similarly, with wheat and other grains, milling capacity is at present more than adequate for the State's own needs and shipment outside is likely to continue to favour grain rather than flour.

The meatworks are in a different position in that their processing goes almost as far as the final pattern of demand requires and some increase in the supplies of cattle, and possibly poultry, is likely to occur. In the immediate future the greatest effort however will probably be put (and rightly so) into increasing the supply of cattle at times of the year when the existing works are not fully utilised, rather than in increasing the supply of cattle at peak periods, whilst increased supplies of poultry would have to be substantial to necessitate any appreciable extension in processing facilities. It is our understanding that a substantial increase in supplies of pigs for pork and bacon is not envisaged, although it would appear that the Australian market could take greater quantities of bacon if prices were somewhat reduced. Since the sheep in Queensland are kept mainly for their wool, it is unlikely that supplies of sheep and lamb for slaughter will justify in themselves any long term increase in slaughtering and allied facilities.

Other industries which might be suggested from an examination of the agricultural and vegetable products available in Queensland include the following:—

Tobacco	Curing, blending, manufacture of cigarettes, &c.
Cotton	Preparing, spinning, weaving
Wool	
Oilseeds (including peanuts)	Crushing and extraction, incorporation in various end products, such as margarine, soap and paints
Fruit	Canning or extraction of juices
Vegetables	Canning or preparation of soups
Beef	
Mutton	
Pork	
Bacon	Canning or preparation of extracts, pastes, soup, &c. (freeze drying and allied processes)
Poultry	
Fish	
Fishmeal	
Eggs	Drying
Milk	Drying or condensing or manufacture of butter, cheese and chocolate

Associated products—frozen dehydrated and dried foods in general; cake mixes, biscuits and confectionery in general, animal and bird foods; by-products such as hides, skins, bone meal, blood, glue, tallow, lard, sugar-cane wax, molasses and bagasse.

The position as regards the processing of foodstuffs such as the above and the various by-products will be considered later.

The various secondary industries which make use of *forest* products available in Queensland are paper and board (including hardboard and particle board), plywood and furniture. The position for paper and board and building materials in general will also be considered later. As far as furniture is concerned, the principal factor influencing development is that of the market, and expansion in Queensland is likely to be limited (because of the importance of transport costs and the effects of usage of new materials elsewhere) by the size of local markets.

As far as minerals are concerned, it has been seen that there is a considerable variety. The more important are—

I.	II.	III.
Copper	Gold	Mineral sands
Lead	Silver	Pyrites
Zinc	Uranium	Salt
Tin	Limestone	Fluorspar
Bauxite	Brickclay	Dolomite
Iron ore	Fireclay	Bentonite clay
Manganese	Building stone	

The likely effects of Groups I. (ferrous and non-ferrous metals) and III. (chemicals) upon the location of industry will be considered later. Under group III., gold, silver and uranium, although of importance, are not likely to lead as raw materials to the attraction of further industry. The remainder of this group are all of importance to the building industry. Because of their relatively low value in relation to bulk, locational factors are of importance, but the value/bulk ratio of their derived products also limits their transportability other than in exceptional circumstances. Furthermore, the availability of these materials is fairly widespread and exploitation of deposits largely depends upon proximity of markets. There have however been certain technological changes in the industry, so that outlets for brickclay and fireclay will be considered later under building materials in general, and outlets for limestone will again be considered in relation to cement. Other related products which are at present mined in small quantities are marble, silica and kaolin. These, as influences on the location of industry, suffer from similar limitations and, although they could become of importance, their present availability in itself is hardly likely to attract secondary industries on any scale.

The following materials are also mined in small quantities. Most would be of some increased significance if an iron and steel industry were established in the State:—

Antimony	Molybdenite	Perlite
Tungsten	Magnetite	Beryllium

The relatively high value of these materials and the fact that they are used in comparatively small quantities similarly reduces their locational effects at present, and it is extremely unlikely that their presence would encourage, of itself, the establishment of a special steels industry or even one concerned with the production of ferro alloys, both of which are usually associated with fairly advanced industrial complexes.

(b) Fuel intensive industries

The following table is based upon the results of the United Kingdom's Census of Production (1954) for "larger establishments". The industrial sectors listed are those with a relatively high usage of one or another of the various types of fuel per £ million of Gross Output, and their order of importance is given for each class of fuel by the figures (from one to fifteen) in brackets on the right of each column. Most of the sectors appear amongst the top 15 for more than one type of fuel. Where they do not, however, appear for a particular class of fuel, the ratio of usage is given in brackets in the column. As already mentioned when discussing locational factors, technological changes will have

affected the level of usage of fuel in general, and changes in the availability of supplies will have affected the pattern of usage as between different fuels. These changes are,

however, unlikely to have been great enough, since 1954, to have altered radically the relative positions of the different industrial sectors as users in the United Kingdom.

FUEL INTENSIVE INDUSTRIES—Consumption of Fuel per £mn Gross Output*

Industry—	Coal	Coke	Gas	Liquid Fuel in Furnaces	Electricity
	Th. Tons	Th. Tons	Th. Therms	Th. Gals	Mn. kWh
Cement	62.0 (1)	1.0 (6)	(22) ..	(22) ..	20.46 (1)
Bricks and fireclay	32.3 (2)	1.1 (5)	..	(83) ..	4.88 (8)
Building materials	28.0 ..	2.6 (3)	(30) ..	(45) ..	1.49 ..
Paper and board	14.6 (3)	(0.3) ..	(2) ..	(70) ..	8.58 (3)
Wallpaper	(1.4) ..	..	(4) ..	255 (5)	(0.56) ..
Glass containers	14.1 (4)	(0.1) ..	508 (5)	900 (2)	6.78 (5)
Glass (other)	11.1 (6)	(0.3) ..	..	274 (4)	5.20 (7)
China and earthenware	10.3 (8)	1.0 (6)	816 (4)	(79) ..	4.17 (9)
General chemicals	10.1 (9)	0.8 (10)	(115) ..	174 (8)	13.89 (2)
Nylon, rayon, &c.	9.5 (10)	(0.1) ..	(24) ..	..	6.83 (4)
Explosives	8.1 (11)	(0.4) ..	(11) ..	(29) ..	(2.11) ..
Dyes and dyestuffs	6.8 (13)	1.0 (6)	(16) ..	(23) ..	3.74 (10)
Coal tar products	6.8 (13)	(0.5) ..	(98) ..	103 (14)	1.24 (12)
Fertilisers	10.8 (7)	(0.2) ..	(39) ..	(14) ..	(2.73) ..
Glue, gum and paste	7.8 (12)	1.2 (4)	(25) ..	(66) ..	2.13 ..
Soap, candles and glycerine	(3.0) ..	(0.1) ..	(21) ..	113 (13)	0.93 ..
Blast furnaces	(1.5) ..	64.2 (1)	7,667 (2)	(31) ..	(2.24) ..
Iron foundries	(2.1) ..	4.3 (2)	306 (7)	(68) ..	(2.06) ..
Iron and steel (melting and rolling)	6.0 (15)	(0.4) ..	2,552 (3)	423 (3)	3.74 (10)
Steel sheets	(2.8) ..	(0.5) ..	359 (6)	190 (7)	3.31 (13)
Wire and wire manufacturing	(0.9) ..	(0.2) ..	169 (9)	21 ..	3.04 (15)
Nails, screws and chains	(1.1) ..	(0.4) ..	163 (11)	172 (9)	(2.15) ..
Tinplate	(3.0) ..	..	140 (14)	213 (6)	3.57 ..
Wrought iron and steel tubes	(2.0) ..	(0.2) ..	276 (8)	100 (15)	(2.27) ..
Miscellaneous—					
Flax processing	(3.1) ..	(0.4) ..	(1) ..	1,128 (1)	6.50 (6)
Spirit distilling	13.7 (5)	(0.4) ..	(1) ..	128 (1)	(2.16) ..
Abrasives	(1.5) ..	0.6 (15)	(105) ..	66 (10)	(1.97) ..

* Figures on the right in brackets in each column indicate the order of importance

Differences in the relative importance of fuels used between the United Kingdom and elsewhere, similarly, are unlikely to affect the basic classification of an industrial sector as being, in general, fuel-intensive.

In the table, related industrial sectors have been grouped together, although for some of the sectors fuel is of much greater importance than for others. Excluded from the table are—

Coke ovens	The largest user of gas per unit of output
Textile packing	Position 11–14 as users of coke
Motor vehicles (repair)	
Brass manufacture	
Textile machinery	Positions 10, 12, 13 and 15, respectively for gas
Non-ferrous metals (smelting and rolling)	
Biscuits	
Tools and implements	
Bread and flour confectionery	Positions 11 and 12 for oil
Textile finishing	
Marine engineering	Positions 13 and 15 for electricity
Rubber	
Lino, leather cloth, &c.	

Coke ovens is, of course, a special case. The rest (except for brass manufacture and non-ferrous metals) must be regarded as miscellaneous items hardly worthy of separate consideration, because of their being divorced from related sectors of industry, their relatively low positions as users and the fact that they have been given positions for only one type of fuel. Non-ferrous metals (smelting and rolling), besides occupying tenth position in the case of gas, would appear as eighteenth for coke (ratio 0.5 th. tons for £ million) and twenty-first for electricity (ratio 2.50 mn. kwh for £ million). It must be borne in mind also that the production of aluminium ingots is limited in the United Kingdom and that its influence on the ratio for electricity will be small. Both non-ferrous metals (smelting and rolling) and brass manufacture will therefore be added to the list and the various industrial sectors selected as likely to be of interest to Queensland (Central Queensland in particular) may therefore be grouped as follows:—

- Various constructional materials
- Paper and board
- Glass, china and earthenware
- Chemical and related products
- Iron and steel products
- Miscellaneous—spirit distilling, abrasives, non-ferrous metals (smelting and rolling) and brass manufacture.

Flax processing has been omitted from the list, because flax is not grown in Queensland, and the expansion of the flax processing industries in other high standard of living countries is hardly likely to encourage a new entrant.

(c) Industries requiring ample supplies of water

It is not suggested that, at present, the availability of water will alone lead to industries requiring large supplies to set up a plant in a given area. Where, however, a decision has been made to expand, for market reasons, in a particular country, it can be a limiting factor on the choice of an area.

In a dry continent such as Australia it is likely to be of special importance, and coastal Queensland has a high proportion of the total rainfall of Australia. Admittedly the use of techniques concerned with dry cooling, the treatment of effluent, the treatment of salt water and the conservation of water in general is likely to be considerably broadened, but only at a cost.

A study of the industrial use of water in the United States of America by concerns using less than 10 million gallons per day indicates that over one-third of the water used is in processing, one quarter is for sanitary and service purposes, the same for cooling and the rest mainly for boilers. For very large users, the proportion going into cooling is considerably increased at the expense of that for sanitary and service purposes, however. The quality of the water required varies according to its use; where it comes into direct contact with or is part of the product, as in the processing of food and drink, pharmaceuticals and biological products, paper and textiles, it must be of very high purity. Industries which are inherently large users of water (in relation to unit of output) may be grouped as follows:—

Processing—

Food	Washing, blanching, cooking, brewing and distillation
Beverage	
Chemical and allied fields	Particularly for the production of acetic acid, ammonium sulphate, synthetic rubber, gun powder, and lactose. It is important but less so for the production of synthetic ammonia, calcium carbide, charcoal and wood chemicals, caustic soda, carbon dioxide and hydrogen, magnesium carbonate, potassium chloride, soda ash, sodium and soap
Iron and Steel	Cooling, washing and rinsing
Pulp and Paper	Removal of bark, pulp washing, cooking wood chips, bleaching pulp and as a fluid
Textiles	Washing, scouring, rinsing, dyeing and steam drying (particularly in production of synthetics such as rayon)
Mining and Quarrying	Hydraulic mining, separating and washing ores
Cooling and Boilers	(Much of this is non-consumptive)
Steam generation of electricity	
Nuclear power stations	
Chemical industry—changes of phase	
Steel and other metallurgical processes	

(d) The importance of market influences

In Part II. the broad trends in the Australian and Queensland economy were considered. Between 1953–54 and 1958–59, annual rates of increase in the main economic determinants of demand at constant prices in Australia as a whole have been as follows:—

ANNUAL RATE OF INCREASE OF ECONOMIC DETERMINANTS OF DEMAND, 1953–54 TO 1958–59

	Annual Average Percentage Increase	Overall Percentage Increase in the Five Years
Population	2.1	10
Number of households	3.0	16
National income	2.7	14
Consumer disposable income	3.0	16
Consumer disposable income per head	0.8	4
Consumer expenditure	4.2	23

Between 1958-59 and 1960-70 population is expected to increase by some 17 per cent., the number of households by 30 per cent. and, on a regression line equation based on the years 1948-58 national income would show an increase of 28 per cent. The more rapid rate of increase in the number of households compared with that of population arises from the effects of the changing age structure of the population and the expected continuation in the fall in the average size of households.

Over the period 1953-54 to 1958-59 manufacturing output as a whole has increased at an annual rate of 9.1 per cent. Excluding fuel and power, the increase was 8.2 per cent. Over the five years therefore manufacturing output went up by 55 per cent. and, less fuel and power, by 49 per cent. During this time the retail price index rose by 14 per cent. and the wholesale price index by six per cent. so that in value terms the increase was even more pronounced.

The sectors of manufacturing industry which have shown the most rapid rates of increase over the five years are as follows:—

INCREASE IN OUTPUT OF MANUFACTURING INDUSTRY BY SECTORS, 1953-54 TO 1958-59

	Per Cent.
Durable goods as a whole	64
of which :—	
Basic metals	69
Electrical apparatus	79
(But not industrial and agricultural machinery)	
Motor vehicles	124
(But not other transport groups)	
Structural metals	81
(But not the broad category of building and construction materials)	
Radio, gramophone and television	435
Non-electric household appliances	142
(But not furniture or furnishings, or electric household appliances)	
Non-alcoholic beverages (alone among food, drink and tobacco)	55
Plastic mouldings (alone among chemicals and allied industries)	73
Paper	102
Electricity	80
Petroleum products	802

These extraordinary increases in production are partly in response to increased demand and partly at the expense of imports. Nevertheless all of the above products would be regarded as belonging to possible growth industries in countries with reasonably high standards of living. The growth industries (i.e. industries likely to expand at a rate above the average for industry as a whole*) fall into one or more of the following categories:—

- (1) Industries benefiting from the general rise in living standards.
- (2) Industries developing as a result of technological changes.
- (3) Industries responding to changes in the above.

Amongst the first category are many of the industries supplying consumer durable goods, certain sectors of the food processing industry, paper and packaging and fine chemicals. Amongst the second are the electronics and petrochemical fields and nuclear energy, and in the third are certain non-ferrous metals industries, parts of the iron and steel industry (particularly special steels and those associated with consumer durables), certain suppliers of building materials, electrical engineering and machine tools. General engineering and rubber manufacturing should expand more or less in line with industry as a whole.

This has been the pattern of growth in manufacturing industry amongst countries with relatively high standards of living, where demand has been allowed to be the final arbiter. There have, of course, been some variations between countries, depending upon differences in habit and the extent of industrialisation and participation in international trade. It has not, as yet, emerged as the pattern in large areas of the world where standards of living are low and where the first steps are being taken in industrialisation. In these latter areas the demand continues to be for cheaper and less complex foodstuffs, clothing, building materials and capital goods. It is however for these products that local industry is likely to be encouraged and receive protection, and it is becoming increasingly difficult for certain sectors of the older established industries of the industrially advanced countries to find outlets. For certain products particularly textiles, they in turn must rely upon some degree of protection at home.

Although therefore Queensland has such raw materials as cotton, wool, hides and skins, and secondary industries which already make use of these, the industries concerned tend to be labour intensive, and, except for wool, have expanded considerably in the low-standard of living countries. This is not to say that there will be no increase in demand in high-standard of living countries for the products of these industries but, even though there will be some switch to higher qualities, the increase will be at a rate lower than the rise in living standards, and greater use will be made of alternative materials. In the United Kingdom the cotton industry relies upon some limitation of imports, but is still obliged to

concentrate increasingly on specialities and make greater use of non-cotton materials. The woollen industry has been more favourably placed vis-a-vis competition from the East, but again is making increasing use of new materials as also is the boot and shoe industry. Although, therefore, Queensland has secondary industries using cotton, wool and hides the advantage to secondary industry in having these raw materials to hand is not a deciding factor. The success of certain parts of the clothing industry in Queensland seems to stem from individual initiative rather than inherent locational advantage, and any expansion could only be in more specialist lines, rather than on a broad front. As far as textiles are concerned the same is true, and expansion must largely be behind continuing protection from imports. As far as the leather industry is concerned, its experiences over the last ten years would hardly lead one to have great hopes for any marked expansion.

The most disturbing feature, apparent from an examination of secondary industry in Queensland, is the limited extent to which growth industries are represented amongst its ranks. As already pointed out in Part II., the secondary industries which are of greatest importance in the State are associated with the processing of raw materials. The bulk of the remaining secondary industries, which are moderately well represented (compared with the rest of Australia), fall outside the classification of growth industries. This means that unless the processing industries expand more than proportionately, or unless sectors of growth industry move in or are developed from existing industries, the State's proportion of Australian secondary industry will decline. The State is not only losing out at present, it will do so in future, since, apart from the processing industries, the remaining sectors of secondary industry, which are reasonably well established, are likely to experience only moderate growth. As things stand, any forecast of income and the resultant levels of demand in the State depends to a marked degree upon the fortunes of primary industry and upon the net results of migration. It would seem inevitable that total personal income will not be as stable or increase so regularly as that of the more industrially developed States of New South Wales and Victoria. Nevertheless, the differences will not be great enough to affect radically the broad pattern of demand in the immediate future compared with these other States. One feature of the pattern of demand in countries with high living standards is the increased importance of services. These latter have tended to be labour intensive, and up until recently it has been difficult to increase productivity, so that increased demand has tended to be met largely from increased employment in these services. With an increasing proportion of personal incomes being devoted to them, the service industries have acted as a stabilising influence on the more advanced economies, although certain sectors, such as the retail trade for example, do experience some repercussions from fluctuations in manufacturing activity and primary industry. In Queensland, the service industries have, and are, being developed and one in particular (which falls outside our Terms of Reference) is the tourist industry which should give considerable benefit to the Queensland economy as a whole.

With a similar pattern of consumer expenditure in Queensland to that in other States, the main differences in demand are likely to arise from differences in the requirements of industry and the various public works projects. Mention has already been made in Part II. of the high usage of fertilisers in the State and of cement in the north. Much of the engineering industry in the State is already concerned with the supply of sugar mill equipment and plate and associated work for various capital projects. Much of this work is of a jobbing nature and more complex and specific equipment tends to be brought from overseas or other States. Local industry should however benefit to some extent from a reasonable demand for specialised types of agricultural equipment (e.g. cane cutting machines), certain types of contractors' plant, road making materials, mining equipment, pipes and transformers and generators. Depending upon the development of food processing, there should be a reasonable demand for food processing equipment and refrigeration plant, as well as refrigerators, deep freezers and air conditioners on the domestic side. These sectors of industry will be referred to later in this report.

Reference has already been made to certain sectors of industry where developments have taken place largely due to individual initiative. Intensive capacity and managerial skill are factors about which it is very difficult to make forecasts. Whilst one would normally expect new ideas to arise more regularly from areas with widespread industrial traditions, the very nature of some of these traditions may inhibit the applications of new ideas. For Australia as a whole, the aim must be to increase the numbers of technically qualified and skilled personnel. The Queensland educational and training authorities would appear to be well aware of the need for this, even though, until such time as the newer industries are better represented in the State, there must be some wastage of talent from migration. The ideal products for a State such as Queensland, where transport costs are so important, are those embodying new ideas and a high proportion of skill. Fortunately some of the industries concerned

* It should however be noted that the term "growth industries" is becoming a misnomer. It would be more accurate to speak of "growth sectors" in many instances.

need not be too closely tied to large markets simply because the value added is great and transport costs thus form a less significant proportion of total costs. Typical products of this category are electrical and electronic instruments, clocks, watches, cameras, jewelry, pharmaceuticals and some cosmetics.

(e) Overall consideration of criteria

The sectors of industry suggested by the application of the various criteria are as follows:—

APPLICATION OF CRITERIA TO INDUSTRIAL SECTORS

Industrial Sector				
Food, drink and tobacco processing	(a)	(b)*	(c)	(d)
Paper and board	(a)	(b)	(c)	(d)
Building materials	(a)	(b)	(c)	(d)
Iron and steel	(a)	(b)	(c)	(d)
Non-ferrous metals	(a)	(b)	(c)	(d)
Chemicals and allied fields (including fertilisers)	(a)	(b)	(c)	(d)
Glass, china and earthenware	(a)	(b)	(c)	(d)
Textiles	(a)	(b)	(c)	(d)

(a) Raw materials available.

(b) Fuel intensive.

(c) Large users of water.

(d) Important sectors belong to growth industries.

* Only for operations, e.g., distillation and drying.

In addition there are sectors of the engineering and metal using industries where local demand is likely to be reasonably high, and certain products of sufficiently high value to withstand moderate transport costs.

Enough has been said of the textile industry (and clothing, skin and leather) to justify exclusion. Much the same limitation of the market applies to glass, china and earthenware as a group, but earthenware pipes and fittings will be considered in relation to the sector on building materials. Fibre glass is important as a raw material and glass containers are important in relation to food and drink.

The analysis of existing secondary industries in the State (Part II.) shows that it is the capital intensive industries (chemicals, food, drink and tobacco and non-metalliferous mine and quarry products), which tend to have the highest value of production per worker and the highest earnings per worker. All of these are also large users of materials. The rubber sector has a high value of production per worker as also has the bricks, pottery and glass sector. Yet both are only moderate users of capital per worker. Clothing, textiles and furniture all have low values of production per worker and low earnings per worker. This analysis compares to the selection made on the basis of "growth sectors" therefore. The industrial metals, machines and conveyances sector in the State, although large, is so diverse that the importance of capital intensive subsections with good growth prospects is not shown up.

In Appendix B of Part II. the ratios of consumption to production for the main industrial sectors are given. These ratios can be examined in relation to one another.

PRODUCTION/CONSUMPTION RATIOS IN QUEENSLAND FOR THE MAIN INDUSTRIAL SECTORS (1958-59)

	Production	Imports	Exports	Apparent Consumption	Ratio Consumption/Production
	(£ million)	(£ million)	(£ million)	(£ million)	
Treatment of non-metalliferous mine and quarry products	12.9	4.7	7.8	9.8	1:1.31
Chemicals, drugs, &c.	14.7	37.1	5.8	46.0	1:0.32
Industrial metals, machines and conveyances	105.2	95.7	31.8	169.2	1:0.62
Textiles	4.5	17.6	2.8	19.3	1:0.23
Skins, leather and leather manufactures	7.0	0.5	1.4	6.1	1:1.16
Apparel	11.3	18.0	3.0	26.2	1:0.43
Food, drink and tobacco	214.0	33.0	145.5	101.5	1:2.11
Sawmills, joinery, boxes, furniture of wood	36.3	1.3	5.6	32.0	1:1.13
Paper, stationery, printing	18.6	9.8	1.2	27.1	1:0.68
Rubber goods, including tyres made and retreaded	6.7	6.4	2.8	10.3	1:0.65

Production exceeds consumption for food, drink and tobacco, treatment of non-metalliferous mine and quarry products, skins, leather and leather manufactures and sawmills, joinery, boxes and furniture of wood, in that order. It might be argued that it is in these sectors the State is best able to satisfy home demand and to compete in markets outside, and that it might do well to concentrate on these sectors. It should, however, be noted that for skins, leather, &c., and sawmills, &c., the significance of imports and exports is small, and that exports are in fact much higher for industrial metals, machines and conveyances even though imports far outweigh exports. The opposite argument to the above which might be put is that the State should endeavour to increase its self sufficiency and improve the consumption/production ratios of certain sectors.

The sectors where the State is most dependent on imports are textiles, chemicals and apparel. Imports of the industrial metals, machines and conveyances category exceed those of the above in total, and imports of food, drink and tobacco exceed those of all categories except this and chemicals. As a means of affording an indication of lines on which the State should best concentrate its secondary industry, therefore, these consumption/production ratios in themselves are somewhat indefinite and can only be of value when broken down further into subsections and considered in relation to the results of the application of the previous criteria.

Much the same is true of the argument that the State could, just as easily as any other, concentrate upon the production of goods from materials which must be imported into Australia. Rubber goods is an obvious case in point, as also are classes of fertiliser and for the moment at any rate, petroleum products, and certain types of tin cans. This phenomenon could only be of significance, however, if other circumstances, particularly market conditions, were right and is again too indefinite to form any basis for selection.

Having then selected various sectors of industry as likely to afford the best prospects of being set up or expanded in Queensland, it is necessary to examine each of these sectors separately. This is done in the following section of the report. The main factors influencing final selection will be the present and likely future levels of demand for the groups of products concerned, and the present and planned capacity available to meet that demand. Quite obviously it will be capacity in Australia as a whole which will be of greatest relevance, whether this is designed to satisfy home demand or demand overseas.

(4) The Consideration of Individual Sectors of Secondary Industry

In this section of the report the various sectors of secondary industry which would appear, on the basis of the selection already carried out, to afford the best prospects of being set up or expanded in Queensland are considered in turn. In some cases the sectors are examined in detail; in others,

where some consideration has already been given to development prospects in an earlier part of the report, the sector is dealt with fairly briefly.

(a) Food processing

The proportion of total expenditure devoted to food is higher in Queensland than in any other State, although total per caput expenditure on food is lower than in New South Wales, Victoria, or Western Australia. There is thus some room for a further small rise in expenditure on food in Queensland as the standard of living goes up. But the volume of food consumed is unlikely to increase except in line with increases in the population, and rises in value are more likely to be associated with price rises in general, and switches in buying habits to more expensive foodstuffs. The likely future trend for food consumption as a whole in Australia is therefore not so much one of all-round expansion but of changes in the relative importance of various types of foodstuffs consumed. Population increase, changes in age composition, and possibly the effects of more women going out to work should all be taken into account in assessing probable future trends.

Products which can be regarded as "growth lines" may be classified as either "convenience foods" or luxury products. It seems likely that, within Australia, the staple foods will decline in importance (though increasing in total consumption at the rate of population increase). As suggested in a previous section of this report, however, some of the main staple foods produced in Queensland have good export growth prospects. Consumption of processed and packaged foods in Australia has naturally already expanded with the changing social structure and rising living standards. The advent of television has brought a new medium for advertising processed lines, and television itself has created the desire for easier, more quickly prepared meals. Australian consumption of the main lines of processed foods—packaged puddings and desserts, crystallised and glacé fruits, canned and bottled fruit, canned and bottled vegetables, and jellies—has been increasing at the rate of something over 5 per cent. a year. Whilst it would be unrealistic to expect this rate of increase to continue in Australia as a whole, the trend has still some way to go in Queensland itself.

The capacity of the Australian food processing industry, which expanded rapidly as a result of wartime demands, is more than enough to supply the Commonwealth's needs, despite population increase, and the export market is essential to much of the industry. Moreover, since the freeing of imports, Australian producers have come under severe competition from imports. In Queensland this has been aggravated by high pressure selling by the large manufacturers in the south, with their large advertising budgets. Moreover, there have been many developments in the south in recent years, and the period of consolidation is now beginning. Nevertheless, this is a field in which Queensland manufacturers, by virtue of the ready availability of most of the

principal raw materials, are well qualified to compete. The various products dealt with below are those which are, or could be, of most direct interest to Queensland.

Chocolate and sugar confectionery.—Over recent years consumption of chocolate confectionery in Australia per head has averaged between 6½ and 7 pounds, whilst that of other confectionery has average between 8½ and 9 pounds per head. Total Australian consumption of all types of confectionery is therefore some 15 to 16 pounds per head, whilst in the United Kingdom—which has had the highest consumption of these items in the world—it amounts to about 27 lb. per head. Whilst the United Kingdom consumption is now falling somewhat, there is clearly room for considerable growth in Australian consumption, particularly in view of the rising proportion of the population made up of children. Generally speaking, consumption of non-chocolate confectionery has progressed rather faster than that of chocolate confectionery, although the latter showed a remarkable rise in 1959-60. If consumption trends in the six years to 1957-58 are continued, that of chocolate confectionery will rise barely faster than population growth, whilst that of non-chocolate confectionery will rise to some 12 lb. per head in 1969-70. Consumption of non-chocolate confectionery could therefore rise at the rate of about 5 per cent. a year. The vast majority of Australian production is located in Sydney, Melbourne, and Tasmania. Queensland, as far as confectionery is concerned, has no special advantages over other Australian States due to the uniform pricing system. It has nevertheless most of the raw materials necessary, and Queensland manufacturers should be at a slight transport cost advantage in selling in southern markets over the southern manufacturers selling in Queensland. Here again advertising is an important feature of nation-wide success, and it is the larger firms that are best qualified to develop this industry in Queensland on a national scale.

Biscuits.—Despite the advent of television, from which some manufacturers hoped to obtain greater sales per head, consumption of biscuits has remained steady at around 16½ lb. per head in Australia. It looks very much, therefore, as if expansion of biscuit consumption will be limited to the rate of population increase. Production is distributed in the six States broadly in proportion to population. But interstate trade in biscuits has been growing, and here again, Brisbane manufacturers in particular should be at no disadvantage in selling on a national basis. Queensland has one notable advantage in the manufacture of certain types of biscuit in its hard wheat, since it grows practically the entire Australian output. This advantage, incidentally, also applies to pasta, production of which has been rising fast in recent years, largely as a result of Italian immigration.

Processed fruit, vegetables and jam.—This industry is heavily concentrated in the east, with Queensland figuring very large already in the Australian pattern of production. In general it is true to say that there is some overcapacity on the canning side, whilst the future lies with freezing and accelerated freeze drying techniques. There are excellent prospects for a rapid expansion of Queensland production using these methods, which, by reducing bulk, help to overcome the problem of transport in selling on a continent-wide basis. The fruit canning industry—mainly pineapple in Queensland—is already faced with difficulties. It is heavily dependent upon exports, and with various cheap labour countries of the world increasing both production and quality, these difficulties seem likely to continue. Within Australia, consumption per head has risen quite fast in the past years, but it seems likely that increases in the future will be limited to population increases. All in all, fruit canning is likely to have a difficult time in the coming years, with increasing difficulty in overseas markets, and local consumption rising at a slow rate. It is indicative of the stationary nature of this industry that figures for Australian production and exports were almost identical in 1953-54 and in 1959-60. Production in the two years for 339 million lb. and 341 million lb. and exports 199 million lb. and 200 million lb. respectively. Some indication of the extent to which the export market has become more difficult in the interim may be obtained from the fact that whilst exports in the two years were within 1 million lb. of each other, the value of exports had declined from £14.2 million to £12.4 million. Consumption per head of crystallised and glacé fruit appears to be steady now, though it has grown since 1952-53.

Canned vegetables are in much the same position, although production of these is geared almost exclusively to the home market. Exports have been quite important in the past, but have been falling over the past 10 years. Production reached a peak in 1956-57, but has been declining ever since, although there was some recovery in 1959-60 due mainly to the desire to reduce seasonal variations. There is no doubt that this is a declining industry, due to the rapid rise in the production and consumption of frozen vegetables; production of these increased from 2.5 million lb. in 1955 to 23 million lb. in 1959-60. There are good continued growth prospects for frozen vegetables, and for frozen dried vegetables. But Queensland will find it hard to compete on a nation-wide scale with the large concerns in the south, who are close to main markets and to some of the best vegetable-growing areas in Australia.

There was a sharp decline in exports of jam and preserves in the years after the war, though these have been holding their own in world markets since 1953-54. Exports are now comparatively small, accounting in 1959-60 for only some 7½ per cent. of production, and it is very unlikely that Australia can recapture its export markets to any great extent. Domestically, there has been a small increase in the rate of consumption per head, and this will again be favoured by the growing proportion of children in the population. But this industry could not be described as expansionary, and population growth is likely to provide the measure of the prospects for its re-expansion.

Production of canned soup increased rapidly between 1954 and 1957 under the influence of vigorous selling campaigns and intensive advertising, but has since fallen off somewhat. Dried soup mixes have taken an increasing share of the soup market, and in 1957-58 36 per cent. of Australian soup production by value was dried. Although total soup consumption has fallen since 1956, it was rising again in 1959, and as soup may be expected to benefit both from the increasing use of television and from the growing proportion of women going out to work, total demand is expected to increase by about 80 per cent. in the next ten years, with continuing switch to dry rather than canned soups. Only a very small proportion of Australian soup production is in Queensland—in 1956-57 only one per cent. production was outside New South Wales and Victoria—but the State is well placed to develop the growing dry soup market by virtue of its availability of raw materials, and by the fact that the small bulk of dried soups in relation to value reduces the transport problem in selling in the southern States. But here again, competition from the larger firms in the south will be intense.

Consumption per head of breakfast foods appears to be now steady, and the growth prospects of this industry are probably limited to population increase.

Dessert powders and prepared puddings are becoming increasingly popular in Australia, and this trend is likely to continue with the growth of television and with more women going out to work. Consumption per head rose from 0.25 lb. in 1952-53 to 0.40 lb. in 1957-58, and this trend will almost certainly continue. There is therefore scope for a rate of production increase rather faster than population increase, and these products are also popular with the increasing child population. Meanwhile, production of custard powders has been falling, probably as a consequence of the large increase in the consumption of instant whips, and other dried desserts and puddings. Television advertising has been a powerful element in the recent success of these lines, and it seems likely that the rapid growth of their production and consumption will continue for some five years at least, easing off somewhat thereafter. Jellies have enjoyed a slowly rising consumption per head in recent years, but cannot be now regarded as a real growth line. Ice cream production has remained more or less steady since 1955-56, but liquid ice cream mix has expanded rather faster than the other varieties.

The various dairy product marketing boards in Queensland are faced with rising costs, only a modest rise in the consumption of liquid milk, and difficulties in the export marketing of butter. They are already investigating the prospects for the marketing of newer dairy products, including flavoured butter oil. The changing tastes of Asian countries is the most hopeful factor here, and the future export pattern of the Australian dairy industry will certainly become very much more heavily orientated towards these new markets than hitherto. But, for the next ten years at least, the rise in demand in these countries, although perhaps quite fast, will not make a great impact on the pattern of Australian exports by virtue of its small initial size. The best prospects are in Hong Kong, the Arab States, Ceylon and the Philippines. But the world surplus of liquid milk production has already led to competition for export markets, and this is likely to intensify in the coming years. Concentrated condensed and powdered milk are likely to remain the export lines with the best growth prospects to these markets. At home, the growth lines are likely to remain frozen dairy foods, dried milk, baby foods, cheese, and liquid ice cream mix. In general, the trend of world consumption suggests an increase in the demand for milk solids rather than for butterfat.

Apparent consumption of cheese in Australia is steady at about 6.7 lb. per head, and has been since 1949. It has been estimated that the total market will increase by about 2.2 per cent. a year over the next ten years, with processed cheese rising rather faster, at just under 3 per cent. a year, and non-processed at less than the average, or just under 2 per cent. a year. If these estimates are correct, then Australia will consume about 35,000 tons of cheese altogether in 1969-70 against 29,400 tons in 1960-61. Of these totals, raw cheese for processing will account for 13,500 tons in 1969-70 (10,800 tons in 1960-61), and other cheese 21,600 tons (18,600 tons). Apart from cheddar and processed cheese, the most remarkable increases in production in recent years have been by small factories producing one or two varieties of the softer European-type cheeses. The immigrants from continental Europe have been the leaders in this development, but in the south, natural born Australians have been

acquiring a taste for these cheeses, and some small factories specialising in them have doubled their production every year for five years. Unfortunately it appears that the soft types of cheese cannot be produced under tropical conditions, and it is in these types that recent successes have been most marked. But there may well be a possibility of producing them or some of the harder European cheeses in the cooler dairying areas of south Queensland, such as the Darling Downs. It should be remembered, however, that these cheeses will remain a fraction of the total cheese consumption, and it is in processed cheese that the most important—if slow—developments will take place.

If production costs of oilseeds in Queensland were brought to a more competitive level, margarine could provide a good growth line—production quotas permitting. Although production of table margarine, after rising sharply in the first half of the 1950's, has been falling slightly in recent years, that of other margarines has continued to climb steadily since 1955-56. Margarine is only about two-thirds the price of butter in Australia, and is rising in demand, particularly from "new Australians" and pensioners; consumption per head in 1958 was only 8.4 lb. against 13.6 lb. in the United Kingdom, and no less than 47.8 lb. in Norway—admittedly an extreme case. Although the production quotas do not seem to have affected the availability of margarine, which appears to be in plentiful supply in the shops, they have almost certainly prevented manufacturers from embarking upon any major sales promotion schemes. Consumer preference for margarine in relation to butter is always hard to foresee—in the United States, with no restrictions upon margarine production, consumption is no higher than in Australia—but the difference in price would ensure at any rate a fair increase in consumption, if sales were tackled vigorously. One estimate—which seems a trifle optimistic—even forecasts a doubling of consumption of all margarines in the next five years.

The advantage to Queensland of a rapid growth of margarine production and consumption may perhaps be regarded as fairly speculative, due to the present wide disparity between the cost of vegetable oils produced in Queensland and the cost of imported vegetable oils. Moreover, the coconut oil which is the present main vegetable oil ingredient of table margarine is not produced in Queensland, and benefits the Australian territories of Papua and New Guinea. But beef tallow makes up 90 per cent. of the ingredients presently used in industrial cooking margarine—21,000 tons in 1958-59—and 15 per cent. of table margarine ingredients—1958-59 production 13,000 tons. Queensland is already a major margarine producer, and either way it stands to gain, though at the cost of adding to the difficulties of the dairy industry.

The fact that animal fats are thought to be a contributory factor in coronary thrombosis—which is already beginning to swell demand for vegetable oils and fats in some countries—could well in the future give a boost to the consumption of animal-fat-free margarine in Australia. Another similar product at present banned in Queensland—is "filled" milk, in which the cream is replaced by vegetable fats. If demand for this develops to any extent, it could be of positive advantage to the Queensland dairying industry, linked with a switch from skimmed milk to grain fodder—such as sorghum—for pig feed. There are excellent prospects of exporting the skimmed milk powder to "filling" plants in Singapore or other Asian countries, as is already done on a small scale. The cheapness of "filled" milk gives it extremely high growth prospects in Asian countries.

There has been a steady growth in the production of *aerated waters, fruit juices, and cordials* since 1952, with the accent on aerated and carbonated waters, whose production has increased from 56,600 gallons in 1953-54 to 69,200 gallons in 1957-58, a rise of about five per cent. a year. Consumption of the latter has risen from 6.02 gallons per head in 1952-53 to 7.02 gallons per head in 1957-58. This is an industry in which transport costs are important; it is highly decentralised and already well established in Queensland. It is likely to continue to provide good steady growth, but with the exception of fruit juices—pineapple in particular—which could enjoy an increasing acceptance in other States, will be mainly limited to the growth of the Queensland market.

Brewing cannot properly be described as a growth industry. Australia already has the highest consumption of beer per head in the world, with the sole exception of Belgium, and its development will probably be limited to the rate of population increase, unless Queensland brewers can develop a special quality product for sale on a nation-wide basis, as has been done in some other States. The only thing that might threaten the steady development of brewing would be an increase in wine drinking. But this seems less likely in Queensland than in the States further south, with their higher proportion of "new Australians" used to wine rather than to beer. Moreover, the principal wine-growing areas of Australia are very remote from Queensland, and beer is perhaps more suited to the climate than wine.

The main growth prospects for *meat* have already been dealt with in Part I. *Canned meat* has suffered in the past few years from competition for supplies of manufacturing type

from the United States. But apparent consumption of canned meat in Australia increased from 2.12 lb. per head in 1953-54 to 5.63 lb. per head in 1957-58, and when further supplies of meat become available as a result of the development of the beef industry, this should remain a good growth line in Australia. But as the Australian industry is heavily dependent upon the export market—in 1959-60 108 million lb. of canned meat was exported out of total production of 146 million lb.—the export market will remain the main determinant of production, and it may well be that in absolute terms the meat canning industry may decline at the expense of the direct export of manufacturing beef, despite growing home consumption.

The limitations on the development of fish processing have also been enumerated elsewhere in this report. The best prospects, both at home and overseas, rest with the processing and/or canning of prawns, scallops, crabs and lobsters, and perhaps oysters, for which luxury foods there will be an ever-growing market in the United States, and in Europe as living standards rise. At the other end of the scale, there seem to be good prospects for large-scale fishing of all types of fish between the Barrier Reef and the coast for the production of fishmeal as a fertilizer, and possibly for the production of a cheap protein food for the Asian markets. But in the latter case, much depends upon the quality and price of the resultant product. As far as other types of deep-sea fishing and processing are concerned, one of the main limitations is the efficiency of the Japanese industry—which already supplies a large proportion of Australia's requirements of canned fish. Australian deep-sea fishing has difficulty in competing with the Japanese, due principally to lower standard of living and working conditions expected by the crews of the Japanese boats. The fish canning industry in Queensland could therefore well develop further by recognising this fact, and landing deep-sea fish—such as tuna—from Japanese boats for canning or freezing in Queensland. This would at least divert part of the cost of the processed product to Queensland from Japan. Australian demand for canned fish is rising quite fast.

Tobacco manufacturing.—It has been seen that Queensland produces very little manufactured tobacco but about half the Australian production of unmanufactured tobacco, which now accounts for about a quarter of the tobacco used in Australian cigars, cigarettes, and pipe tobacco. In 1958-59 £3 million of unmanufactured tobacco was exported, mainly interstate, and £5 million worth of cigarettes were imported, again mainly from other States. The vast majority of the Australian tobacco manufacturing industry is located in New South Wales and Victoria.

Cigarettes have shown the best growth trends in Australia in the past five years, apparent consumption rising at the rate of about 7 per cent. a year, whilst that of manufactured tobacco in total has gone up by only about 4 per cent. a year. As the domestic industry has expanded, imports of manufactured tobacco have declined steadily from £17.8 million in 1953-54 to £13.8 million in 1959-60, but in the latter year cigarette imports ran surprisingly counter to the trend by increasing to £812,000 from £332,000 the year before with greater freedom of imports. Whilst B.A.T.'s cigarette production in Australia has remained more or less constant during the past year or two, that of Rothman's has climbed steadily. This, combined with the rise in imports, which satisfies a taste for other types of cigarettes—probably largely American—suggests that there is still room for new cigarette manufacture in Australia. But further expansion by anyone in Australia almost certainly depends upon advertising more than on anything else, and a new entrant would have to have large resources at his command.

Transport is not a particularly significant factor in the location of cigarette manufacturing, but the size of the Queensland market is small—only about eight per cent. of the Australian market—and this would tend to offset the advantage of being close to domestic tobacco supplies.

(b) Pulp, paper and board

Current expansion plans by the major Australian pulp, paper and paper board manufacturers—Australian Paper Manufacturers Limited, Associated Pulp and Paper Mills Limited, and Australian Newsprint Mills Limited—will supply the bulk of Australia's requirements with the exception of newsprint. Even at present imports, though important in total, are mainly confined to long-fibred pulp for mixing with short-fibred eucalypt pulp, newsprint, and part-mechanical printing papers. Though the Australian industry does export small quantities of paper and board, this has been limited in the past both by the rapid increase in domestic demand, and by the industry's inability to compete with the large pulp and paper-producing countries of the world. This may, of course, change, both as techniques of utilising eucalypt fibre—pioneered in Australia—improve, and as increasing investment brings down costs; but for many years yet, the Australian industry will probably have to confine itself mainly to the domestic market. The freeing of imports has put the industry under considerable strain, and tariff protection for a number of qualities of paper has been sought. But some, at least, of this competition from abroad has been at prices lower than those in the exporting country, and the Australian

industry is probably more firmly based from a cost point of view that its relative inability to cope with foreign competition would seem to imply.

This is not to say that Australia could ever become a major paper exporting country. Shortage of forest resources will be the main limiting factor, and in particular, the deficiency of long-stapled fibres. Some 10 per cent. of requirements of long-stapled fibre are met from domestic sources at present, but it seems unlikely that the growing quantities of pulp from the softwood plantations will keep pace with the rapid expansion of demand envisaged. It is estimated that the shortage of native softwood fibres will remain a problem for at least 25 years. Further research may yet prove it possible to substitute semi-chemical pulp from broad-leaved tropical timbers for groundwood thus diminishing the dependence on long-fibred coniferous pulp; but even then it seems unlikely that Australia's forest resources could meet the total pulp requirements of a completely self-sufficient paper industry. Eucalypt pulp is satisfactory in the production of newsprint and fine papers (with relatively small additions of coniferous pulp), and there are no problems attached to its use in hardboard. But the short fibres cannot give the strength required for kraft, and admixtures of about 40 per cent. softwood fibre must be made.

Despite the industry's present difficulties, the long-range prospects for growth at a rate considerably greater than that of population increase are good. In 1958 Australian consumption of paper was high at 160 lb. a head. In the United States it was about 400 lb. a head, and it has been reliably estimated that if Australian consumption rose to 250 lb. a head, total Australian consumption would have doubled between 1958 and 1968. Demand for paper and board, excluding newsprint, increased by 10 per cent. in 1959-60 alone. Consumption of fine papers remained practically stationary for a few years prior to 1958, but is now showing a marked upward trend. Paper for packaging is likely to remain one of the strongest growth lines; the value of output of paper and paperboard for packaging is still less in relation to other types of packaging than in the United Kingdom, United States, and Canada. A large increase is still possible, with increasing paperboard cartoning of fruits, deep-frozen products, and the growth of super-market merchandising.

Quite apart from the concentration of population in New South Wales and Victoria, demand for paper per head is higher in those States. In the case of fine papers, the two States account for 82 per cent. of the Commonwealth's total consumption, and have only 66 per cent. of the population. Thus, whilst potential proportionate increase is greater in Queensland and in the other less-developed States, the locational pull of market density towards the south is stronger even than population concentration provides. Moreover, apart from closeness to the markets, the main locational factor for the pulp and paper industry is proximity to raw materials, and whilst Australia's forest resources could not be described as large, the volume of forest in the south untapped by the industry is still very great. South Australia has the largest area of softwood plantations. We have already seen that Queensland cannot offer large reserves of timber for pulp, and in certain areas of the south, its existing reserves are already being used faster than natural regeneration restores them.

The long-term prospects of shortage of raw material for the Australian industry would, however, seem to point clearly to the use of sugar cane bagasse to provide some of the Commonwealth's pulp needs. Bagasse provides more or less the same length fibre as that of temperate broadleaved woods, so its use would not solve Australia's shortage of long-fibred pulp. It is possible to make greaseproof and glassine papers possessing good transparency and resistance to grease and oil from bagasse, but the tear resistance must be improved by blends of coniferous wood. Writing or printing, bond, ledger, and book papers may be made from bagasse, but fillers are generally required to give the desired opacity. It is not suitable for strong wrapping and bag papers, but if mixed with coniferous wood pulps can be used for many qualities. It may also replace part of coniferous wood sulphite in newsprint and magazine book papers, where it improves the formation and increases the strength. Since it is not possible to make groundwood-type pulp from bagasse, conventional newsprint cannot be made entirely from it; but magazine-type papers of good quality can be made from chemical pulps derived from it. In sum, it can be a useful pulp for admixture, but its use as the sole pulp in paper is limited. The trend towards a higher fibred cane in Queensland, combined with improving engineering and boiler efficiency is making available more and more bagasse over and above what is used as fuel in the mills themselves, and it is estimated that a large mill may have a surplus of 25 per cent. The difficulties of using surplus bagasse lie in the fact that the surpluses of several mills must all be collected and carried to the pulp mill, and the costs of this operation tend to offset the chief advantage of bagasse as a paper and paper board fibre—its cheapness. If sugar mills are converted to burn other types of fuel, thus making available the whole of the mills' bagasse for pulping, one is then involved in a

complicated costing analysis of the profitability of both sugar mills and pulp mills. Nevertheless, the successful solution in Latin America and elsewhere of these and other problems, such as that of bailing and storing the bagasse during the comparatively short sugar milling season to feed a pulp mill in operation for most of the year, make it entirely feasible that a bagasse pulping industry could be established in the Mackay or Cairns districts. Distance from main markets remains a problem, but the ready availability of the third main requirement of a pulp industry—plentiful and cheap water—is an attraction in North Queensland that will almost certainly sooner or later bring the industry there. Moreover the other great difficulty of pulp and paper production in remote areas—the lack of suitable chemicals—will be lessened in Queensland by the possible availability of salt for the production of chlorine and caustic soda. Neither should sulphur and quicklime present problems, should they be required. But it must be realised that, apart from the technical difficulties, the hard economics of pulp and paper production in places remote from large consuming centres often preclude the immediate development of even the most promising materials. Expert examination is needed of water supply, effluent disposal, and a host of other factors, which all require the most careful assessment. The fact that a number of companies have examined the question without a bagasse-pulping industry having grown up is an indication of these difficulties.

It is believed that on purely economic grounds, the cost of a thorough investigation into the question of pulping bagasse is justified, and that once the Australian industry has got over its present difficulties and had time to digest the recent large-scale investments, it will consider Queensland more attractive. As far as a full-scale paper industry is concerned, Queensland already has a stake in the fastest-growing sector of the industry—the production of 45,000 tons annually of paper board for cartons and containers at the Petrie mill. Due to the Australian policy of freight equalisation from destinations abroad to main Australian ports, Brisbane is at no disadvantage over the other main Australian ports for the import of long-fibred pulp for admixture to produce the grades of paper requiring it. Moreover, increasing quantities of coniferous timber will become available from the growing softwood plantations in Queensland. The size of the Queensland market remains the main limiting factor at present.

As far as building board is concerned, recent developments in the south combined with the industry's difficulties caused by the credit squeeze and the consequent restriction of building probably preclude the further development of the Queensland industry much beyond that of the Burnie Board mill at Ipswich for the time being. But eventually, thinnings and tops of trees from the sawmilling areas in the regions north of Brisbane should be able to support a hardboard factory—the timber is in the main unsuitable for the production of particle board. But the economic capacity for a hardboard factory is some 50-60 million board feet a year, the size of the present Burnie Board plant in Queensland. It may be some years before Queensland can support the doubling of its hardboard capacity. There are enormous reserves of low-grade eucalypt timber suitable for the production of building board near both Sydney and Melbourne. Bagasse has been used for the production of hardboard, but once again, the main problem lies in transport costs from sugar mills to factory—the freight component of bagasse is about the same as that of the finished product.

(c) Building materials

By 1957, the post-war housing shortage in Australia as a whole had been very largely overcome, particularly in Queensland, South Australia, Western Australia, Tasmania, and Northern Territory. In mid-1957 Queensland had an estimated deficiency of only some 8,000 dwellings. Besides this, annual new housing needs in Australia as a whole due to population increase were estimated in 1957 at 53,000. Taking into account the increased numbers of people reaching marriageable age, and assuming an annual migrant intake of one per cent. of the population, annual new housing requirements were expected to reach 66,000 in 1965, and 78,000 in 1970. Queensland will—at a conservative estimate—account for at least 12 per cent. of the total Australian requirements—about 8,000 in 1965, and 9,400 in 1970. In fact, however, both the 1965 and the 1970 estimates have already been exceeded. In the year up to the end of June, 1961, the number of new flats and houses approved in the whole of Australia amounted to 93,558, and in Queensland to 11,913. This, too, was a fall from the levels of the previous year, due principally to the credit squeeze, but in fact the level of new housing activity has only fallen back to the 1958-59 level, although the overall figure disguises a greater decline in construction of houses and a proportionate increase in the construction of flats. Flat starts, in fact, are the only class of building to show an increase in 1960-61 over 1959-60 which was a peak year for house construction. For the past few years, therefore, new dwelling construction has been catching up on the backlog of housing shortage quite fast, and in Queensland it is probably true to say that the backlog has been virtually eliminated.

Estimates of new family formation in Australia published recently exceed the 1965 and 1975 housing requirement estimates, made in 1957, on page 55. They suggest that new family formation in Australia will amount to 80,000 a year in 1965, and almost 100,000 a year by 1970. If the theoretical Queensland minimum of 12 per cent. is again taken, then family formation in the State will amount to 9,600 in 1965, and 12,000 in 1970. On the basis of natural increase alone, therefore, it would seem that current house and flat building in Queensland is if anything rather in excess of requirements, and unless net immigration shows a marked increase in the coming years—it will be several years before a marked expansion in dwelling construction in the State will be possible. Even with the effects of increase in the standard of living and of the replacement of existing houses, this probably remains true.

The value of building starts in Queensland in the June quarter of 1961 shows a slight improvement over the corresponding period in 1960. This is mainly accounted for by a large increase in the value of factory starts, which disguises a decline in most other classes of building.

QUEENSLAND—VALUE OF BUILDING STARTS (£'000)

Class of Building	June Quarter		Proportion of Australian Total
	1960	1961	
Houses	7,050	6,957	11.9
Flats	1,401	483	8.4
Hotels	942	683	21.2
Shops	639	349	8.9
Factories	698	2,250	15.1
Offices	877	661	9.2
Other business premises	745	428	8.3
Educational	895	743	7.5
Religion	166	239	15.8
Health	193	145	2.4
Entertainment	67	227	6.0
Miscellaneous	730	1,358	29.6
Total	14,403	14,523	11.6

The proportions of the Australian totals included in the above table are put in merely for interest, and should not be taken as a guide to the overall trends in the proportions of each class of building undertaken in Queensland; over such a short period as three months, such a proportion is unreliable.

It has already been said that the proportion of new dwelling units started in Australia accounted for by flats has shown a significant increase from 1959-60. This increase is mainly concentrated in Sydney, and in Queensland new flat starts in the June quarter of this year still accounted for under 9 per cent. of total dwelling starts in the State, and about the same proportion of the Australian total of flat starts. Nevertheless, flat construction has been growing fast and steadily in Queensland for the past ten years—in 1952-53 there were 101 flat starts in the state, and by 1960-61 this had risen to 1,153.

In Australia as a whole, the years after the war saw a decline in the prewar pre-eminence of the brick house, but this was due largely to special circumstances in Sydney. Since 1952 the proportion of new dwellings constructed of brick and brick veneer has been steadily increasing again at the expense of the weatherboard house. In 1958 there were more new housing starts using brick, concrete, and stone, than there were using timber, and since then, the former class of house has steadily increased its lead.

AUSTRALIA—NEW HOUSING STARTS BY OUTER WALL MATERIAL (Proportion—Per cent.)

Material	1956-57	1958-59	1959-60	1960-61
Brick, concrete and stone	34	38	43	45
Weatherboard	38	35	31	30
Fibro-cement	27	26	25	24
Other	1	1	1	1
Total	100	100	100	100

These proportions are very different for Queensland, where the traditional weatherboard house on stumps has been found to suit the climate. Even there, however, few new houses are now built on stumps, and brick, concrete and stone dwellings are gaining ground to some extent.

QUEENSLAND—NEW HOUSING STARTS BY OUTER WALL MATERIAL (Proportion—Per cent.)

Material	April-June	
	1960	1961
Brick, concrete, and stone	9	12
Wood	71	70
Fibro-cement	18	17
Other	2	1
Total	100	100

The principal drawback to the further development of brick-built houses is cost. In 1959, the cost of a brick-built house in Queensland was 16 per cent. higher than a timber house of the same size, and 36 per cent. higher than a fibro-cement one. On the other hand, maintenance costs of a brick house are very much lower than on a timber house, the resale value is higher, and monthly repayments on mortgage are only marginally higher. In general, therefore, the initial cost is higher, but the long-term benefits of a brick house tend to offset this. Increased affluence may therefore be expected to lead to a gradual substitution of brick-built for weatherboard houses. This process must, however, be gradual, and the only thing that might lead to a significant substitution of brick for weatherboard and fibro-cement houses in the future is a considerable reduction in the price of bricks. Even here, the main element in the higher cost of a brick-built house is the longer time it takes to put one up, with consequently increased labour costs. Only about 10 per cent. of the cost of a house is represented by the cost of the bricks: the reduction in brick costs would therefore have to be considerable to achieve a significant reduction in total costs. Due to high transport costs on a material of low commercial value, any new brickmaking venture on the kind of scale that would bring down unit costs would have to be in or near Brisbane, and it is unlikely that any great impact can be made on the preponderance of timber and fibro-cement construction outside the metropolitan area, although there may well be scope for new, small brickworks up the coast, where raw materials are available.

As far as Australia as a whole is concerned, structural metals have been the strongest growth line in construction materials in the past seven years. Building fittings have also increased rather faster than the average for building materials as a whole, as have non-metallic mineral products, mainly clay bricks and Portland cement. Timber production has grown rather less than the average.

AUSTRALIA—PRODUCTION INDEX OF BUILDING MATERIALS (1953-54 = 100)

	1960-61
Building and construction materials	128
Non-metallic mineral products	137
Clay bricks	133
Terracotta roofing tiles	87
Cement roofing tiles	122
Cement building sheets	109
Portland cement	168
Fibrous plaster sheets	104
Structural metals	181
Timber and Board	111
Building fittings	144

Because Queensland's housing construction pattern differs markedly in some respect from that of Australia as a whole, and furthermore because the habit of living in flats has grown greatly in southern centres—though new flat construction is still only about 15 per cent. of total dwelling construction—demand for bricks and cement has gone up more in those areas than it has in Queensland, at the expense of such things as roofing tiles, sawn timber, and asbestos cement sheet, the demand for which in Queensland remains buoyant. We have seen that the flat-dwelling habit has been making considerable advances in Brisbane over the past ten years (although from almost insignificant beginnings in 1952), and although the Australian pattern of extensive rather than intensive dwelling is likely to remain perhaps more deeply entrenched in Queensland than in the industrial southern centres, flat construction is likely to continue to grow as land values in the metropolitan area go up, giving rise to a rather more than average increase in the demand for bricks, concrete blocks, structural steel, cement, and roofing materials other than tiles. The same effect will result from the fact that building other than for dwelling is maintaining its momentum rather better in the face of the credit squeeze. Concrete blocks, in particular, have enjoyed the most rapidly rising demand of all building materials for a year or two, and this is likely to continue. The Brisbane area already has a sizeable stake in this field, and there would seem to be good opportunities for new plants up the coast—particularly, perhaps, in or near Townsville, which already has a cement works, and in Rockhampton, should the new cement works there materialise.

Galvanised iron was at the time of the 1947 census the most popular roofing material in Australia, accounting for 67 per cent. of the total of existing buildings. This was followed by tiles (22 per cent.), slate (6 per cent.), and fibro-cement (2 per cent.). As might be expected, the proportion of galvanised iron roofing is declining, although it remains extensively used in rural areas, where other roofing materials are not readily available. Nevertheless, as can be seen from the table earlier, tiles have proved a disappointment, particularly terracotta ones. Despite this, there would seem to be good opportunities for development of tile production in Queensland which, if slow, might well be reliable, and could well be linked with increased production and usage of floor tiles, as the traditional Queensland wood flooring becomes scarcer and more expensive. Floor tiles can also be developed for use in patios.

The fact that Brisbane is only one-third sewered, and other towns up the coast, although usually more highly sewered than Brisbane, are not usually more than 80 per cent. sewered, points clearly to a large potential for the production of earthenware, asbestos cement, and concrete pipes. Production of these is already well established in Queensland, and some firms have established plants in various centres up the coast. But this is clearly a "growth" line for many years yet, and until recently there has even been some scope for import substitution—in 1957-58 Queensland imported £2.4 million worth of earthenware, cement, and china more than it exported both interstate and from overseas.

Fibre glass presents another interesting possibility. Development prospects are not limited to Queensland itself. A small Mackay firm sells fibre glass shower baths competitively in Sydney. This material has also good prospects for use in the construction of boats (which fits in with the development of the tourist industry in Queensland), as a heat insulating material for roofs, in industrial laminations, and anti-corrosion coatings for such outlets as brine tanks, sugar pumps and sewerage installations.

Heavy transport costs on a low value commodity make building materials a highly decentralised industry in Australia as elsewhere, and there is little interstate trade in them. In general, therefore, the growth of building materials will be confined to the growth of the Queensland building industry. We have already suggested that materials for house construction are not likely to grow much in the next ten years or so, and the only possibility of development lies in substituting some materials for others. In the field of construction for purposes other than housing (such as offices and factories), however, there should be good scope for further expansion of materials. The Australian boom in this type of construction which has taken place in the past ten years or so has largely passed Queensland by, and it may well gather considerable momentum from now on in Queensland, as the credit squeeze eases.

(d) Iron and Steel

Queensland's imports of iron and steel were valued at £19.5 million in 1957-58. All but £2.3 million of these came from New South Wales and the major part was finished steel. (See Table on page 30, Part II.) At an average price per ton of, say, £60, the total value of steel imports would only represent some 300,000 tons, and the major category of imports, which was £8.2 million's worth of plate and sheet, is unlikely to have represented much more than 100,000 tons. Although at one time it might have been possible to establish a small re-rolling mill to satisfy some of the local demand for flat-rolled products, this would have been difficult enough in view of the comparative proximity of Newcastle, New South Wales, to the main using area in Queensland. The advantages of large scale production now makes it extremely difficult for the older types of re-rolling mills to compete in flat rolled products with continuous strip mills. Even in those sectors of the steel industry where large scale production has not yet become possible or essential and where some recent technical changes have improved the competitive position of smaller scale units, the quantities used in Queensland are too small to encourage local manufacture. As with flat rolled products in general, it might previously have been possible to have produced coated material from imported black plate or sheet, but now that facilities have been and are being expanded in New South Wales this too is less likely.

The market situation in Queensland is unlikely, therefore, in itself to bring about under present circumstances some form of iron and steel manufacture. Up until recently this was the situation in all Australian States except New South Wales and Victoria, and even the latter State did not have a large iron and steel industry. The geographical concentration was matched by a concentration of ownership which seems likely to continue. The only company outside the B.H.P. group which produces ingot steel is the Melbourne Iron and Steel Mills Pty. (part of Australian National Industries), which makes mainly special steels from scrap. Even so it has to buy some billets from B.H.P. and its associates. The Charcoal Iron Industry, set up by the Western Australian State Government makes only pig iron for foundry use. Lysaghts Works Pty. Ltd. (for coated and uncoated steel sheets), two manufacturers of small merchant sections, four makers of light steel bars, rounds, and flats, and N.T.I. Ltd. (for electric resistance welded tubes) all rely upon the B.H.P. group or imports for their raw material. The B.H.P. Group is not merely concerned with the production of first stage iron and steel products, but through its subsidiaries Rylands Bros. (Australia) Pty., Lysaght Bros. and Co. Pty. and Commonwealth Steel Co. takes an interest in a wide variety of finished products. Stewarts and Lloyds (Australia) Pty. and British Tube Mills (Australia) Pty., both of which make a variety of tubes, are associate companies.

Already, great strides have been made in the Australian iron and steel industry. Since 1954-55, the value of imports of iron and steel has been halved. Exports in fact exceeded imports by some £7 million in 1959-60. Although in 1951 some 43 per cent. of direct steel requirements were met from

imports, by 1958-59 this had been reduced to six per cent. Meanwhile consumption increased at an average annual rate of 4.9 per cent. per head so that production had to go up by 7.7 per cent. per head per annum. Up until 1970 it is anticipated that, as a result of increased consumption per head and increased population, demand will rise at an average rate in the region of five to six per cent. per annum. To meet these increases production facilities have been and are being expanded. The main centres affected are shown in the following tables:—

PRODUCTION OF PIG IRON BY B. H. P. GROUP (Thousand tons)

—	Newcastle, New South Wales	A.I. & S.* Port Kembla, New South Wales	Whyalla, South Australia	Total
1946	563	290	38	890
1960	801	1,598	209	2,608

* Australian Iron and Steel Co.

PRODUCTION OF STEEL INGOTS BY B.H.P. GROUP (Thousand tons)

—	Newcastle, New South Wales	Port Kembla, A.I. & S.	Whyalla, South Australia	Common- wealth Steel Newcastle, New South Wales	Total
1946	703	333	Nil	19	1,055
1960	1,261	2,162	6	78	3,507

PRODUCTION OF IRON ORE (Thousand tons)

—	Iron Monarch and Iron Baron, South Australia	Yampi, north of Western Australia	Total
1946	1,299	Nil	1,299
1960	3,465	784	4,249

PRODUCTION OF COAL BY B.H.P. (Thousand tons)

—	Northern*	Southern†	Total
1946	933	406	1,339
1960	1,775	1,754	3,529

* For B.H.P., Newcastle.

† For A.I. & S., Port Kembla.

PRODUCTION OF LIMESTONE AND DOLOMITE (Thousand tons)

—	Limestone		Dolomite Ardrossan, South Australia
	Rapid Bay, South Australia	Marulan, New South Wales	
1946	160	246	Nil
1960	273	1,051	168

Not all of the above materials are consumed by the iron and steel industry. Thus, although Port Kembla gets almost all of its limestone (some 500,000 tons) from the high grade Marulan supplies, much of the rest is made into cement by the Southern Portland Cement Co., and from the coal which is converted into coke there are numerous by-products which have led B.H.P. into the chemical industry.

Since the war the principal developments have been in the expansion of the work at Port Kembla, still in New South Wales, and the increased usage of iron ore from Yampi, which is on the opposite side of the continent from Port Kembla. Production has of course gone on increasing at the original centre of Newcastle and capacity will be increased there from the 1.25 million ingot tons at present to 1.5 million and eventually to 2 million. Port Kembla has however outstripped Newcastle. Early in 1962 steel making capacity will be 3.25 million ingot tons. In addition facilities are being expanded for the making of special steels, electrolytic tinplate (completion in next few months) narrow CR strip and wide plate. Outside New South Wales work is progressing on the steel works at Whyalla, South Australia, for production to start late in 1963. B.H.P. already has blast furnaces there and a shipyard. Steel making capacity will eventually rise to 475,000 tons based on the local ores, so that a greater proportion of ore supplies for New South Wales will come from Yampi. The development of Whyalla with supplies of iron ore and limestone at hand and its reasonable situation for New South Wales coking coals and the South East markets would appear to be logical. The proposed development for Kwinana, Western Australia, some 20 miles south of Perth, however, appears less so. B.H.P., it is true, already has a merchant bar rolling mill there and high grade ore will be taken from Koolyanobbing and Bungalbin. But a standard gauge railway must be built between Kalgoorlie and Perth to obviate double handling of coke or coking coals

brought from New South Wales, until such time as the Western Australian soft coal can be utilised, and the Western Australian market cannot absorb all the steel likely to be made with 450,000 tons capacity from an integrated plant. At present Western Australia takes some 6 per cent. of the steel distributed in Australia. Admittedly, the scheme is unlikely to come into operation before the late 1960s, and Western Australia is well placed for certain export markets such as India, but the Australian steel industry as a whole is likely to be faced with a surplus by then and the balance of the argument in favour of having a steelworks in Western Australia rather than in Queensland would seem to be slight. Even Tasmania has not been neglected by B.H.P. and at Bell Bay a furnace will be in operation early in 1962 for the production of ferro alloys. Although important in that this will save imports of £1.5 million a year, the project is relatively small—only 60 per cent. will be employed. It is not likely to have the same multiplier effect as at Whyalla, South Australia, for example, where the population is expected to have increased to 20 thousand in a few years' time. It will, however, reduce the chances of Queensland having a ferro alloys industry of her own.

Up until recently, Queensland was always considered to be likely to have a steel works eventually, as being the only State other than New South Wales with coking coals. Plans are already in hand for the increased export of coal from Central Queensland to Japan for use by the latter's steel industry. Queensland is also closer to the iron ore deposits at Yampi Sound than New South Wales, to South-East Asian countries, and uses approximately ten per cent. of the Australian output. Admittedly it would be less favourably placed than Newcastle and Port Kembla for the main using areas in Australia (New South Wales and Victoria take 67 per cent. of the Australian output) and it would be less convenient to establish various stages of steelmaking separately than in those centres, but these disadvantages apply to any State apart from New South Wales and Victoria. In addition to coking coal, Queensland has deposits of iron ore in a number of areas such as Constance Range, the Cracow field and Kianga. Not much is published about the quality or the extent of these deposits. Those in the Constance Range are reported to be of good quality and considerable; they are however some 120 miles from the Gulf coast and transport would prove a difficulty. An embargo has been placed by the State Government on the export of iron ore from the three areas mentioned above. Some time ago there was a proposal that a company independent of B.H.P. might consider setting up a steelworks on the east coast of Australia using ores from New Caledonia (which however have a high nickel content. The discovery of new iron ore deposits and the extension of known deposits in Queensland and other parts of Australia now makes such a project unlikely for the next few years.

Ideally, from the point of view of raw material supplies a Queensland steelworks would appear to be best located near, say, Collinsville in the north or in Central Queensland. From the point of view of internal demand, however, such a works would have to be near Brisbane, which in turn is fairly near to Newcastle in New South Wales. Furthermore, current development plans in the Australian steel industry would appear to be such as to anticipate the continued growth in demand for steel in Australia for some time to come. By 1965 Australian crude steel consumption is likely to be in the region of five million tons. By 1970 it should be just under 6.5 million tons. Present development plans alone indicate that Australian capacity will be in excess of 5.5 million by 1965 and over six million tons by 1970, and particular shortages at the finishing end such as in tinplate (for which Australia has the third highest consumption per head in the world), bright strip, certain structurals and alloy steels, will have been specially catered for. It has been forecast that, by the late 1960's, Australia will have £100 million's worth of steel available for export. Exports are doing very well at present, but world capacity is increasing and it may, in the next few years, be more difficult to dispose of the increased quantities available as surplus to home requirements. Fortunately steel costs in Australia at present compare very favourably with those of other parts of the world and much depends upon the extent to which free trade is allowed. As things stand it would appear unlikely that there would be much prospect of Queensland having a steelworks before the late 1960s, and in the initial stages a steelworks in Queensland (especially in the central or northern areas) would have to be export oriented, but later the multiplier effects of the steelworks itself should help generate local demand and thus reduce the necessity for exports. On balance, the argument in favour of having a steel works in Queensland must rest on likely secondary effects and resulting social benefits. When these are taken into account and set off against any likely differences in steel costs compared with other parts of Australia, the argument in favour of having a steelworks in Queensland by the end of the next ten years would appear to carry considerable weight. The discovery of natural gas in substantial quantities and its subsequent application to steelmaking could, of course, considerably improve Queensland's competitive position, and the steel industry would not be alone in benefiting from such an eventuality.

(e) Non-ferrous metals

Aluminium.—Reference has already been made on page 3 in Part I. of this report to the availability of bauxite in Australia and plans for its exploitation. In 1956, just under 10 thousand tons of primary aluminium were produced in Australia and a further 12 thousand tons were imported. By 1960, home production had increased to just under 12 thousand tons and imports were in excess of 26 thousand tons. With exports accounting for only a negligible amount, and the usage of secondary aluminium (mainly for castings) remaining fairly stable at two thousand tons, apparent consumption in 1960 could therefore be put in the region of 40 thousand tons. For semi-fabricated products, Australian production came to 21.5 thousand tons and imports to five thousand. By 1960, home production at the finishing end had risen to 38 thousand tons and imports to 11 thousand. Calculations of consumption per head are extremely difficult to make accurately, particularly because of stock changes. Thus on the basis of apparent consumption of primary and secondary aluminium, consumption per head in Australia would work out in the region of 9 lb. per head in 1960. Other estimates have however ranged from below this figure to as high as 12.81 lb. This latter figure is compared with 23.06 lb. in the United States of America, 14.9 lb. in the United Kingdom and 3.92 lb. in Japan. Estimates of future consumption in total in Australia, even assuming a population of 11.3 million in 1965, vary considerably, therefore, but a figure of 50 thousand tons for that year can be regarded as a minimum. One forecast based on a low estimate of current usage per head and the assumption that the United States intensity of usage will be achieved by 1965, puts consumption as high as 130 thousand tons. It seems unlikely however that the present United States rate of usage will be achieved by 1965, and even if it was and New Zealand had an equivalent rate of usage to Australia (adding a further 25 thousand tons to demand), on present production plans there would still be a surplus of primary aluminium capacity in Australasia.

There can be no doubt that the installation of capacity on the extent envisaged in Australasia (188 thousand tons by the mid-1960's), has arisen as much from competition between the major producers for the command of resources as from the precise calculation of what the market will bear. In 1960, smelting capacity in the non-Communist countries totalled some four million tons of which almost three-quarters was in the United States. Most of the remainder was in Western Europe with only 100 thousand tons in Japan, 25 thousand tons in the rest of Asia, 40 thousand tons in Africa and 12 thousand tons in Australia. Undoubtedly demand outside Europe and America will increase, but capacity will increase also and any export possibilities which do arise will be extremely hard fought. In Japan, for example, smelting capacity by the mid-1960's is likely to have trebled to 362 thousand tons.

Queensland has been vitally concerned in the consideration of possible sites for aluminium plant. The most likely possibility was for a plant of at least 30 thousand tons capacity, utilising alumina from Weipa and electricity from a large power station based on open-cut coals in Central Queensland. Comalco (Consolidated Zinc and Kaiser Aluminium) however, decided to go ahead with a project at Invercargill (South Island, New Zealand) where cheap hydro-electric power could be obtained. Although the present project (to use 285 MW) does not exhaust the possibilities of further development of hydro-electric power near Invercargill (which are said to total at least 600 MW) capital costs for a second stage development would possibly be higher, so that Central Queensland might again become of interest in the later 1960's. Meanwhile the expansion by Comalco of the Bell Bay plant in Tasmania will require further exploitation of hydro-electric power resources in the island, and the smelter at Geelong, Victoria, with which Alcoa is concerned, will utilise power from brown coal. Reynolds and British Aluminium, through Australuco, the largest aluminium fabricator in Australia, have exploitation rights to deposits at Gove Peninsula, Northern Territory and to hydro-electric power resources in New Guinea. They have not, as yet, announced plans for the production of primary aluminium.

Although Central Queensland may come up for reconsideration as a site, it must be admitted that there will be considerable competition from New Zealand and New Guinea in that these areas can offer hydro-electric power. Inside Australia hydro-electric power is still capable of being developed, in Tasmania, the Snowy Mountains, and Northern Queensland, but the cost advantage of power from these sources is likely to be much reduced, if one exists at all. The greatest differences in generation costs, in fact, are likely to arise from differences in the size of generating plants rather than the actual source of power. Until further detailed studies are made by interested parties or more information is published all that can be said on the comparative cost situation is that Central Queensland deserves further consideration.

As far as the demand side is concerned, it must be borne in mind that although the bulk of the Weipa alumina will be going to New Zealand, only some 68 thousand tons of aluminium will be produced inside Australia by 1965 or

so, with a possible additional 32 thousand tons after that at Bell Bay. Although Australasia is likely to be in surplus, therefore, Australia itself will only be in surplus at one stage removed with its alumina. One is then faced with a number of questions regarding future pricing policy. Suggestions have been made that the home market should be protected and that compensation for uneconomic sales overseas obtained from higher prices in the home market. This could lead to difficulties with other countries regarding "dumping" and to difficulties in the Australian market, which might be required to pay a high price for its aluminium to support the uneconomic disposal of any surplus arising in New Zealand. It may eventually appear easier for some company to expand internal capacity in Australia further and thus avoid complications, and the chances of Queensland participating in the smelting of aluminium would be considerably increased.

Copper.—On page 2 of Part I. details are given of the output of copper from Mount Isa and Mount Morgan in Queensland, and the world position is considered on pages 23 and 42 of Part II. Mount Morgan's blister copper (from their smelter) is refined by the Electrolytic Refining and Smelting Company of Aust. Pty. at Port Kembla, New South Wales. At present levels of output it is unlikely that refining will be carried out locally in Central Queensland. A new copper smelter with capacity for 70 thousand tons has recently been commissioned by Mount Isa and will lead to a considerable reduction in the volume of copper concentrates sold at such. Meanwhile the company's refinery near Townsville will eventually be in a position to treat the bulk of the blister coming from the west.

In 1957, the Electrolytic Refining and Smelting Company had capacity for 30 thousand tons of electrolytic copper and produced some seven thousand tons of fire refined copper, whilst the Mount Lyell Mining and Railway Company produced some ten thousand tons of electrolytic. The Mount Isa expansion has thus completely transformed the industry and Australian requirements should be well covered for some time to come. In 1959, the total production of refined copper in Australia was 51·6 thousand tons. Exports of refined copper came to 2·7 thousand tons and imports to 3·5 thousand so that apparent consumption of primary copper came to 52·3 thousand tons. When stock changes are taken into account, actual consumption is likely to have been less than this. At present it is estimated to be in the region of 50 thousand tons. Further increases in output of refined copper will depend therefore to a greater extent on export prospects, which appear reasonable. Meanwhile prospective developments by Mount Isa already anticipate these, as well as the development of the home market. Exports of blister copper from Australia in 1959 came to 16·2 thousand tons and 18·8 thousand tons of copper concentrates were exported.

Lead.—The position as regards lead mining in Queensland is given on page 3 of Part I. and as regards world prospects is given on pages 23 and 24 of Part II. Australian production of refined lead was 187·2 thousand tons in 1959, having remained round about that figure for five years. Exports of refined lead came to 138·4 thousand tons in 1958, so that apparent consumption was 48·8 thousand tons. In 1956 apparent consumption in Australia was 35·7 thousand tons, but this discrepancy was probably due to stock changes. Nevertheless, even if actual internal consumption increases it is likely to do so only at a moderate rate, and continue to take only a small proportion of total output.

Mount Isa Mines production of lead bullion from lead ores smelted at Mount Isa in 1937-38 was 51 thousand tons. In 1958-59 it rose to 57 thousand tons, but fell to 50·5 thousand in 1959-60. This bullion is refined in England by the Britannia Lead Company Limited, a subsidiary of Mount Isa Mines. In 1959-60, 43 thousand tons of refined lead, six thousand tons of antimonial lead alloys and 4·3 million ounces of fine silver were produced. From the fact that the Britannia Lead Company has recently purchased new plant and with the present state of the world market for lead, it is unlikely that refining capacity will be installed in Queensland on any large scale for some time to come. It should be noted that the Port Pirie lead refinery (the only one in Australia) is in process of modernisation but that this is designed to increase capacity for zinc. Meanwhile the lead-zinc smelter at Cockle Creek, New South Wales, will shortly be coming into production, taking lead and zinc concentrates from Broken Hill.

Zinc.—The production of refined zinc in Australia had increased from 83 thousand tons in 1950 to 116·4 thousand tons in 1959, when exports came to 41·6 thousand tons. Apparent consumption therefore came to 74·8 thousand tons in 1959. (Further information on zinc is given on page 3 of Part I. and page 24 of Part II.) The only zinc refinery in Australia is at Risdon, Tasmania, and uses concentrates from Tasmania and Broken Hill. As noted earlier, however, new capacity will be coming in at Port Pirie and at Cockle Creek, and capacity at Risdon itself is being increased.

Mount Isa's production of zinc concentrates (33·6 thousand tons in 1959-60 containing 17·5 thousand tons of zinc) is shipped overseas at present. There is a distinct possibility that a smelter will be set up in Queensland,

even though capacity is being increased elsewhere in Australia, to cater mainly for overseas demand.

Tin.—Australia's production of refined tin in 1959 came to 2,226 tons. Imports were 1,120 tons and apparent consumption therefore was in the region of 3,300 tons. There are two smelters in Sydney. Supplies of tin are augmented by the recovery of tin from waste tinplate. Tinplate production is increasing and demand for tin should therefore also increase quite rapidly.

Queensland supplies just under half the tin concentrates produced in Australia. World trade is partly in the form of tin concentrates, partly as crude (or semi refined) tin and partly as refined tin. For historical reasons smelting has tended to take place in the countries using tin, but political factors and foreign exchange shortages have affected the situation. As things stand, with Australian supplies of concentrates being fairly small, smelting is likely to continue to take place near the large using centres, where both home and foreign supplies can be handled. As demand increases imports may increasingly be in the form of refined tin. The capacity of smelters is fairly elastic and that of the two in Sydney is said to be in excess of present output. In any case on the scale of the industry in Australia (and on the scale which could at present be contemplated in Queensland), the numbers employed in smelting are fairly small and the effects on an economy such as that of Queensland would also be small.

(f) Non-ferrous and metal semi-fabrication

All told there are more than 250 firms engaged in fabricating aluminium or in utilizing aluminium compounds as a principal component in production. Some 200 of these firms are fairly small, with a limited range of products, and it is to be expected that eventually the industry will become more concentrated with a greater diversification of products per firm and more vertical integration. At present, over 200 of the above firms are located in New South Wales and Victoria with only 24 in South Australia, 16 in Queensland, seven in Tasmania and six in Western Australia. The part of the industry making castings is particularly widespread and small scale. That part making wrought products tends to have larger plants and considers location with easy access to raw materials and markets of greater significance. Australuco with plant near Sydney and a new project near Melbourne has over 50 per cent. of the fabricating business and undertakes most types of work, particularly for building, transport and domestic appliances. The next largest manufacturer, Southern Aluminium, has a plant near Sydney; Austral Bronze has a plant in New South Wales, Victoria and Tasmania; Metal Manufacturers has a plant at Port Kembla, whilst Crane Copper and Aluminium is at Sydney. Three of these firms are concerned with non-ferrous metal manufacture in general.

In spite of the development of the aluminium fabricating industry in Australia imports have continued to play an important role. In 1958-59 imports of rolled, extruded and drawn aluminium products weighed 5,142 tons, half of which were accounted for by leaf and foil. Imports of powder at 550 tons in 1958-59 were also significant, whereas imports of aluminium conductors for power cables and wires (of which there are three manufacturers in Australia) had declined sharply. By 1960, when home production of semi-fabricated aluminium was estimated to be at 38 thousand tons, imports still came to 11 thousand tons. Further development plans have however been announced, and a new Australuco plant at Cabramatta will have capacity for three thousand tons of foil. G. R. Crane Holdings and Comalco Industries have recently announced that they will be associated in the production of semi-fabricated aluminium.

In 1957-58, out of a total consumption of some 28 thousand tons of semi-fabricated aluminium products, over five thousand tons were in the form of castings. Of the remainder, 41 per cent. was flat rolled, eleven per cent. was foil, 18 per cent. was extruded, 22 per cent. was wire and the balance was drawn tube. Queensland consumed less than five per cent. of the total. There can however be no doubt that Queensland's consumption of final products incorporating aluminium was much higher and that the bulk of semi-fabricated aluminium products are being incorporated in finished equipment before being despatched to Queensland. It is to be expected that demand for aluminium foil, and conductor in particular, in Queensland will increase considerably and that there will be a good demand for aluminium in building. At present the production of semi-fabricated aluminium would, however, most probably need to be allied with that of other non-ferrous metal semi-fabrications. Semi-fabrication in the State would be encouraged if an aluminium refinery were located there, but even as things stand, coastal towns in Queensland are almost as well situated for the receipt of ingots as towns in New South Wales.

As far as copper products are concerned, the most likely product to be allied with the production of aluminium is wire and cables. Mount Isa Mines has already gone some way in the production of wire bar at Stuart and is now going further with the production of rod and wire. Until Mount Isa entered the market there was no plant in Queensland

concerned with the rolling, extruding, or drawing of copper. Of the 21 such plants (belonging to 19 companies) in existence in Australia in 1957, 11 were in New South Wales, eight in Victoria and one each in South Australia and Tasmania. Metal Manufacturers, in conjunction with its subsidiary Austral Bronze, controlled more than 80 per cent. of total output of intermediate products and was the only supplier of rod and wire for redrawing by cable makers. There were also 19 of these latter in Australia in 1957. Only nine however were concerned with the rolling, extruding, or drawing of copper as well as cable making. Metal Manufacturers was again in a key position in cable making. Since 1957, cable and wire making capacity in Australia has increased under the influence of protection tariffs, and Olympic now makes cables in Queensland, using copper from Mount Isa. Imports of single strand copper wire, which were as high as £44,500 in value in 1954-55, declined from £12,700 in 1957-58 to £2,700 in 1959-60. Imports of single strand wire from copper based alloys however increase between 1957-58 and 1959-60 (£88,100 to £96,500), whilst those of aluminium increased from £48,00 to £75,400. The value of imports of covered wire and cables recovered from £0.9 million in 1957-58 to £1.3 million in 1959-60.

In addition to producing rod and wire, Mount Isa has also started the semi-continuous casting of copper cake, which is at present being delivered to Crane Copper and Aluminium in Sydney for conversion into sheet. Rolled and extruded products account for about one-third of the usage of copper and copper alloys, with a further third going into wire and cables and the remainder into pipe, tube, and castings. As far as copper and copper alloy strip is concerned however, the industry in Australia has recently been faced with considerable competition from overseas, and employment has been more than halved. After an application to the Tariff Board, temporary duties of 12½ per cent. on copper sheet and strip and ten per cent. on brass sheet and strip have been imposed. Undoubtedly the whole industry in Australia will feel like attempting to overcome present problems before considering the further establishment of plant in new areas. One possible solution to present problems might however be for some capacity to be transferred to an area where good quality raw materials are readily available and where any scrap accruing could be quickly and cheaply returned to a refinery such as that of Mount Isa for reprocessing. Mount Isa is certainly able to compete effectively in supply raw material on world markets, where prices have been lower than in Australia. In 1958, a copper bounty (maximum £45 per ton) was introduced and at that time reduced the price of electrolytic copper to Australian users from £330 to £285, which was almost on a par with prices in London. Since then, when world prices have fallen lower than this, the Australian price has been maintained, partly by means of the bounty and partly by an import duty which came into operation once Australian prices fell below £275. There can be no doubt that this system has been of considerable benefit to Mount Isa, but it would appear to be less of a necessity than for other mines in Australia. Any changes in the system would therefore have a less serious effect on Mount Isa than it would on certain other suppliers, so that the risks of being closely wedded to one supplier, if that supplier were Mount Isa, are small.

It is in *copper alloys* that zinc, lead and tin are likely to be of greatest significance as industrial materials in Queensland. The best known alloy is brass. Much of this material is produced in the form of castings (for various types of fittings). Many of the foundries have however been small and their size has been dictated largely by the size of local demand rather than by economies of scale or the advantage of location near raw materials. With the possibility of both a copper refinery and zinc smelter in North Queensland, brass manufacture would almost certainly take place to some extent. For use in an unalloyed form zinc would have to be sent to other locations for the galvanizing of hollowware and iron and steel products, and the location of these would continue to be determined by factors other than that of a zinc smelter. For tin also, the largest outlet is in association with iron and steel products. Neither tin nor lead is likely, under present circumstances, to be refined in Queensland on any large scale so that the principal reason for their use in manufacture locally in Queensland would be the strength of local demand or as alloys of copper. The principal outlets for unalloyed lead are associated with building, plant construction

and the manufacture of batteries. Manufacture for these outlets is very often on a small scale and associated with some other activity. Because of the weight factor and the softness of the metal, local manufacture is also very often necessary. The biggest usage of storage batteries is in vehicles, the manufacturing location of which determines the location of the manufacture of original equipment for these. The manufacturers of original equipment then have some advantages in the supply of replacements whilst the vehicles are in service. The extent to which they are able to exploit this advantage depends upon their pricing policy and the extent of their distribution organisation, but an independent local manufacturer can also have considerable advantages in this particular case.

In conclusion therefore it would appear that there is scope for considerable increase in non-ferrous metal fabrication in Queensland. The principal products which are most likely to be of interest are those of aluminium, copper and copper alloys. The aluminium products concerned are foil, cable and structural; the copper products are wire, cables, pipe, tube and possibly sheet and strip, once the present market difficulties have been overcome; the copper alloys would be in the form of wire, cables, brass rod and condenser tube. The production of these latter products would be particularly encouraged if a zinc smelter was established in the North.

(g) Chemicals

This is an extremely broad field of activity and the first selection of parts of the industry likely to be of interest to Queensland was based on the availability of raw materials. Subsequently the chemical industry was shown to be, in general, fuel intensive and a large user of water and, again in general, to have good growth prospects. As for the other industries which were provisionally selected, consideration has had to be given to the level of capacity either in existence or planned, and in the case of the chemical industry in Australia a considerable transformation is at present going on. This transformation will affect not only the balance between imports and home production, but the relative importance of different sectors of the chemical industry itself. The main reason for the new developments stem from the desire to increase national self-sufficiency and the size of plant installed has been largely determined by the present and likely future levels of demand for various products in Australia. The chemical industry is one where, particularly for "growth" lines the volume of production is all important and it will be difficult for the Australian petrochemical and plastics industry in particular to compete internationally with those of countries which have larger national markets and plant operating on much larger scales. The need to avoid over-capacity in the Australian chemical industry would therefore appear to be of much greater importance than for other industries, and the need for concentration is much greater.

In subsequent pages the chemical industry is dealt with by main sectors. As far as Queensland is concerned the sectors of interest are—

- (i.) Fertilisers—From the point of view of local demand in particular and availability of raw materials.
- (ii.) Drugs and cosmetics—From the point of view of Australian demand and from the fact that locational influences are not particularly strong.
- (iii.) Petrochemicals and associated products—From the point of view of their effect on the Australian chemical industry (and particular raw materials available in Queensland) and because of the planned installation of an oil refinery in Brisbane.
- (iv.) Various sectors indicated by the availability of raw materials not covered under the above.

Fertilisers.—As has been seen in Part II., Queensland produces no synthetic *nitrogenous fertilisers* although it consumes over half of the ammonium sulphate used in Australia. The high Queensland usage of nitrogenous fertiliser however is due almost exclusively to the sugar industry. Usage on other crops—in common with the rest of Australia—remains a long way below that of other parts of the world, especially

Europe, where farmers have been increasingly convinced of the productive advantages to be derived in recent years, and its usage has been increasing at about 10 per cent. per annum, faster than the rate of increase of phosphatic or potash fertilisers. In recent years, too, world trade in nitrogenous fertilisers has grown much faster than for other types of fertiliser—principally to Asian countries, which collectively import more nitrogenous fertilisers than any other area of the world with the exception of Africa. It is true to say that the possibilities of nitrogenous fertiliser consumption in Asia are practically unlimited. In 1958-59 usage in South and South-east Asian countries rose by more than 100 per cent. over the previous year. Asian producers of nitrogenous fertilisers include Japan—which accounts for over 80 per cent. of Asian production—India, Pakistan and Taiwan, but the industry is being established in many other countries, and nitrogenous fertiliser imports by the whole of Asia have tended to decline due to the increase in local production. In sum, Asia, and particularly India and China, present the best prospects for increased fertiliser use in the world—urea is already extensively used on the paddy fields, and the urgent need to increase food production all over the area will ensure a continued rapid growth for many years yet.

The position of the Australian nitrogenous fertiliser industry is complicated by the present overcapacity for ammonium sulphate, and its high price (despite a steady decline over the past few years) giving rise to formidable competition from imported urea, which is not at present manufactured in Australia. Last year Australian ammonium sulphate cost \$63 a metric ton, compared with \$48 in the United Kingdom, and \$47 in the United States. The Japanese industry in fact enjoys surprisingly little cost advantage over the Australian industry, but the freight advantage due to back-loading to Australia gives Japanese urea the edge over both the domestic industry and over imports from other countries. The new tariff increases will make a considerable difference; but the further development of the industry for the next few years has been foreseen by ICIANZ in its new ammonia-methanol plant at Botany, which will have a rated capacity of 63,000 tons of finished products a year, and will be capable of providing all of Australia's requirements of urea for both industrial and fertiliser use for several years. Under present conditions, therefore, there is no scope for expansion in Australia. But nitrogenous fertiliser demand is extremely elastic, and much depends upon price. It has been suggested that demand for urea could approximate to one million tons a year if the price could be brought down. Oil or natural gas could provide the ideal opportunity for a large integrated urea plant in Queensland. As economies of scale are considerable, it is only a large-scale plant of this kind that could provide the kind of reduction in unit costs that would ensure expansion of Australian demand and enable it to compete in the export market with any initial surplus. The principal obstacle to export sales in South-east Asian countries would remain freighting costs, and unless these can be overcome, it may well be many years before a plant of the necessary size would be capable of finding markets for its production. But in any case, any nitrogenous fertiliser industry in Queensland would have the advantage of the immediate proximity of the largest current users of nitrogenous fertilisers in Australia—the sugar cane farmers. A scheme to produce 75,000 tons of ammonium sulphate and 25,000 tons of urea at Rockhampton has been shelved, probably because of the falling ammonium sulphate market—since 1958 the price has fallen from £38 a ton to £30.

Another interesting possibility is presented by ammonium nitrate as a nitrogenous fertiliser. The manufacture of ammonium nitrate from natural gas is well established—the basic raw materials are air and natural gas. It has been enjoying a rapidly rising usage in Europe, and now accounts for 40 per cent. of demand among European farmers, who are perhaps more nitrogen-conscious than farmers almost anywhere else. Because of the risk of explosion, pure ammonium nitrate is usually mixed with calcium carbonate in the proportion 60-40. The presence of the calcium carbonate helps to overcome the acid-forming action of pure ammonium nitrate, so that the mixture has virtually no effect on soil pH, which is a desirable characteristic in acid and in light, sandy soils. The particular advantage of ammonium nitrate over both urea and ammonium sulphate is that the nitrogen is present in two forms—half in the ammonium form, giving fairly good persistence to leaching, and half in the nitrate form, which gives a high immediate availability to plants. The disadvantage is that it is slightly more bulky than ammonium sulphate, and has about the same proportion of nitrogen, which is again less than half the nitrogen content of urea. Nevertheless it would certainly be a good nitrogenous fertiliser for sugar, due to the presence of the two forms of nitrogen, and the discovery of natural gas anywhere within reasonable distance of the sugar-cane areas of Queensland could well give rise to a profitable ammonium nitrate-calcium carbonate plant to supply some of the sugar cane farmers' requirements. In the meantime, however, the situation is overshadowed by the surplus ammonium sulphate capacity in Australia.

The possibilities of greatly increased demand for *superphosphate and potash* in Queensland rests with the cattlemen. A large proportion of Australia's superphosphate production goes to pasture improvement, and whilst Queensland is the principal beef-growing area of Australia, it has only 2½ per cent. of the Commonwealth's superphosphate production and a degree of overcapacity. The development of coastal fattening of beef will almost certainly eventually bring an increase in consumption of these fertilisers—the speargrass country alone is estimated to amount to 43 million acres, and the carrying capacity can be trebled or quadrupled with the use of superphosphate and Townsville lucerne. These estimates are the result of C.S.I.R.O. experiments, and they also showed that the time taken to produce marketable cattle could be halved. Whilst little can be done until the farmers become convinced of the virtues of pasture improvement, there is no doubt that in due course it will come, and the establishment of large-scale integrated factory producing mixed granulated fertilisers—here again the economies of scale can be considerable—will become possible. At present potash—which is lacking in Australian soils—is imported, and Queensland is at no disadvantage from the cost point of view. But it may prove possible to extract economically the potash from the Central Queensland Salt Industries' production—the brine contains 450 parts per million of potassium. Phosphate rock is also imported, and until such time as the iron content of Mount Morgan's pyrites can be used, the production of sulphuric acid for superphosphate production from this source is unlikely to be an economic proposition. The establishment of an iron and steel and chemical complex is probably an essential for this—pyrites is only used economically in parts of the world, particularly in Germany, where every element can be utilised on the spot. But in any case, Queensland is at no disadvantage in the use of imported brimstone for sulphuric acid production.

Although not so spectacular as the prospects for nitrogenous fertilisers, Asian usage of potash and superphosphate has been increasing considerably in recent years, and has been unmatched by any great increase in productive capacity. Consumption in South and South-east Asia in 1958-59 was 20 per cent. up on the previous year for superphosphate, and 7 per cent. up for potash. Net imports of these types of fertiliser have increased sharply in the past few years. Once again, if the freight problem could be overcome, there is no reason why some surplus capacity of a large Queensland plant of economic size should not find a ready market in these countries.

Under present circumstances, there are a considerable number of qualifications about greatly increased fertiliser production in Queensland. But the long-term prospects, both in Australia and among Australia's near Asian neighbours, are tremendous, and Queensland is better placed than most parts of Australia to produce fertilisers on a large scale, both from the point of view of increased local consumption linked with rising beef and crop production and the existing high rate of fertiliser usage on sugar cane, and from the point of view of availability of raw materials. Should natural gas become readily available and farmers other than cane farmers develop the habit of intensive fertiliser use the advantages should become decisive. But productive capacity in Australia except for potash is tending to run ahead of demand, and it may well be that a risk must be taken in establishing the industry before either Australia or Queensland is ready for it in order to forestall developments in other States.

Drugs and Cosmetics.—The Australian drugs and toilet preparations industry has expanded considerably since the war. In 1959-60 the value of exports of drugs and medicinal preparations, mainly to New Zealand and New Guinea, exceeded £2 million and that of toilet preparations was £122,500. Investment in 1959 totalled £3.5 million. Nevertheless, in that year, the Australian industry only supplied some 70 per cent. of local requirements, excluding the packaging of goods imported in bulk, and a large proportion of the materials used was imported. Imports of drugs and medicinal preparations were valued at £13.7 million in 1959-60 and of toilet preparations at £210,600. The Australian drugs industry is still largely confined to the manufacture of a relatively small number of products, where local demand is high enough to allow for some economies of scale. Many of the leading firms are subsidiaries or affiliates of overseas companies—the largest company is Drug Houses of Australia.

Of the total of 212 factories in Australia in 1957-58 concerned with the drugs and toilet preparations, only six were in Queensland. These latter only employed 114 persons and had a value of output of £424,000. This compares with a total of 6,834 persons and a value of £40.5 million in Australia as a whole. It is worth noting that South Australia had 13 factories, employing 489 persons, with an output valued at £2.7 million. All of the Queensland factories were in Brisbane. One of them was a subsidiary of a Swedish company and another was part of the Drug Houses of Australia group. In 1958-59 the number of factories producing

pharmaceuticals and toilet preparations had increased to seven, workers to 126 and the value of output to £509,000.

By contrast with drugs, the Australian production of cosmetic creams and lotions, face powders, toilet soap and talcum powder remained fairly stable between 1953-54 and 1957-58, although there was some increase in values.

AUSTRALIAN PRODUCTION OF COSMETICS, &c., 1953-54 AND 1957-58 ('000 cwt.)

	Cosmetic Creams and Lotions	Face Powder	Talcum Powder	Soap (Toilet)	All Soaps and Detergents
1953-54	20.3	3.4	30.2	300.0	2,137.6
1957-58	19.7	2.7	36.7	373.0	2,611.7

Exports of soap and soap substitutes increased in value from £281,000 in 1953-54 to £452,400 in 1957-58, but declined to £438,500 in 1959-60. Imports of soaps and soap substitutes however, increased from £385,300 in 1953-54 to £726,800 in 1959-60, and those of perfumery increased over the same period from £359,100 to £666,300. In 1958-59 Queensland had nine establishments producing soap and candles with 241 workers and a value of output of £1.2 million. In 1957-58 143,000 cwt. of soap (£721,059), 26,000 cwt. of detergents (£233,292) and 10,000 cwt. of soda crystals (£18,805) were produced.

As far as Queensland is concerned therefore the production of drugs, cosmetics and soap is of apparently little significance in the Australian total. But imports of drugs and medicinal preparations, mainly from other States, came to over £4.5 million in 1957-58, those of perfumery and toilet preparations to over £2 million and those of soap and soap substitutes to over £2.3 million. Even out of the relatively small production of these items in the State, £212,000 worth were sent outside. There is thus a considerable movement of these items, and although the larger markets have their attractions as centres for location, the intake of raw materials is relatively small (Queensland has certain of these, particularly bentonite clays and fullers earth) and the value of the finished products is sufficiently high to make location, except for soap and detergents, of much less significance than for many other products. Much depends upon the quality of research and of advertising rather than on production itself as a means of competing with other firms, and through them with other areas. In certain countries in fact some manufacturers in these fields have been able to site factories and laboratories in comparatively remote but attractive areas where air pollution and competition for labour and land are less of a problem than in the larger centres. It is not suggested that Queensland should seek to be independent of imports of all the above products since the totals given will include a wide variety of products, but there is every reason to believe that local production could be expanded in a number of lines in the drugs and cosmetic field in the context of Australian expansion.

There can be no doubt that demand for drugs will continue to expand in Australia and in overseas markets, and this will enable producers in Australia as a whole to increase their range of products and the supply of their own materials. Exports will not, however, come easily since competition from

other countries is intense and subsidiaries of overseas concerns in Australia may be restricted in the parts of the world which they can serve. Between 1955-56 and 1958-59, however, Australian exports of drugs and medicinal preparations as a whole almost doubled, and exports of bacteriological products and sera in particular increased in value from £58,000 to £333,000. There are of course differences between groups of products which affect the level of sales at any one time. One such difference is between proprietary medicines, which are sold heavily on advertising, and ethical and standard preparations where technical innovation is important and the average life of any one product may be extremely short.

The future for increased manufacture of cosmetics depends very much upon the extent to which foreign firms which advertise widely in Australia can be encouraged to expand their facilities there, rather than rely upon imports. Export prospects would appear, in Australia's case, to be less encouraging than for drugs.

Petrochemicals.—In 1959-60 consumption in Queensland and in the Murrumbidgee district of New South Wales of main petroleum products was as follows:—

CONSUMPTION OF PETROLEUM PRODUCTS (Million gallons)

	Queensland Marketing Area	Australia	Percentage Queensland of Australia
Aviation spirit	5.5	29.3	19
Motor spirit	163.7	1,192.5	14
Aviation turbine fuel	13.0	68.7	19
Lighting kerosene	8.1	61.3	13
Power kerosene	12.8	58.1	22
Automotive diesel oil*	37.6	209.1	18
Industrial diesel oil*	18.7	231.0	8
Furnace oil*	19.6	613.7	4
Total	279.0	2,463.7	11

* Including bunkers—the effects of this inflate consumption figures for New South Wales, Victoria and Western Australia in particular. The latter's figures are considerably affected by this factor.

Queensland already has one small refinery at Hamilton which has only a limited range of products. It processes two thousand barrels of crude oil per day, which is roughly equivalent to 26.4 million gallons per year. Imports of refined products from other States and overseas at present therefore satisfy the bulk of the market. The refinery planned by Amoco, to be set up near Brisbane not later than the end of 1966, will have a crude oil capacity of 730,000 tons per year. This is roughly equivalent to 193 million gallons per year, and the volume of finished products will be somewhat lower. There would still, therefore, have to be a considerable import of finished products, even working on overall figures. The precise breakdown into types of finished products coming from the Amoco refinery is not known, but certain types of finished product will certainly continue to be imported in entirety, and more northerly parts of the State are likely to continue to be dependent on imports for most refined products.

Refining capacity in Australia as a whole is at present in the region of 13 million tons, and when current plans reach fruition it will be increased to almost 20 million tons. The greatest change however is not just in the volume of refining capacity, but in the installation of associated plant for the production and treatment of petrochemicals. The first venture in Australia into petrochemicals based on local oil refineries was in 1958, and now there are 18 plants in existence or under construction. All of these are in Victoria and New South Wales, and all use feedstocks directly or immediately derived from adjoining refineries. The various refineries and associated petrochemical plants are as follows:—

PETROLEUM REFINERIES IN AUSTRALIA

Company	Location	Crude Oil Capacity thousand tons/year 1960	Number of Petrochemical Plants	Approximate Cost of Installation of Petrochemical plants (including some plants under construction) (£ million)
Stan-Vac	Altona (Victoria)	2,100	9	34
Boral	Matraville (New South Wales)	830	4	6
Shell	Clyde (New South Wales)	950*	3	14
Shell	Geelong (Victoria)	2,400	2	2
Australian Oil	Kurnell (New South Wales)	2,250†	..	..
Boral	Hamilton (Queensland)	100	..	..
B.P.	Kwinana (Western Australia)	3,500	..	..
Stan-Vac	Adelaide (South Australia)	(1,800) completion January, 1963	..	..
Amoco	Brisbane (Queensland)	(730) completion December, 1966	..	..
Total		12,130	18	56

* Capacity is at present about one million tons/year, and there are no plans to increase. The feedstock for the new catalytic cracker (cost £17 million) is to be imported and is expected to amount to 0.5 million tons in 1963 and 0.8 million tons in 1965. The two petrochemical plants associated with Clyde will be based on a much higher refinery capacity than indicated in the table therefore.

† Being extended to take 3.8 million tons.

The structure of the four main refinery and petrochemical complexes can be gauged from the following outline. There are, of course, numerous by-products associated with the production of the items given below.

MAIN PRODUCTS OF PETROCHEMICAL PLANT IN OPERATION OR PLANNED IN AUSTRALIA

Main Products	Cost of Plant	Output
<i>Altona, (Victoria)</i>		
Carbon black	£ 2 million	60 million lb. p.a.—most raw materials still imported
Sulphur	£ 2 million	14,000 tons p.a. 45,000 tons p.a.
Ethylene—		
Polyethylene	£ 4 million	15 million lb. p.a.
Ethylene dichloride ..	£ 2 million	(With chlorine and caustic soda for P.V.C.—cost £2 million)
Styrene monomer	£ 2 million	(For polystyrene plant at Rhodes)
Butadiene—		
Synthetic rubber	£ 5 million	(With styrene from above—36,000 tons p.a.)
<i>Matraville and Silverwater, (New South Wales)</i>		
Ethylene	£ 2.5 million	
Styrene monomer	£ 2 million	10,000 tons p.a. (for polystyrene plant at West Footscray Victoria)
Mixture of benzene, toluene and xylene		(Separation and purification—35,000 gallons per day—benzene for styrene monomer above)
Domestic gas and other by products		
<i>Clyde, (New South Wales)</i>		
Epoxy resins	£ 6 million	1,000 tons p.a.
Ethylene (from imported feedstock)	£17 million	
Polyethylene	£ 5 million	
<i>Geelong, (Victoria)</i>		
Detergent alkylate	£ 1 million	7,000 tons p.a.
Sulphuric acid	£ 0.7 million	35,000 tons p.a.

It is interesting to note that there are no petrochemical plants associated with two of the biggest refineries, and that one of the smaller refineries (Matraville), which is only slightly larger than the new refinery at Brisbane will be, has four associated plants. There is ample scope for further use of feedstock in close proximity to many of the established refineries, however, and the big factors influencing further development of the petrochemical industry will be the level of demand and the development of new products. At present there is considerable competition in Australia from imported plastic materials. In the case of polyethylene, for example, output is running well below capacity since, due to technological progress, certain overseas producers have been able to cut prices drastically and increase their sales in Australia. Some additional tariff protection has been afforded, but capacity in Australia is again being expanded in anticipation of a future rise in usage per head. Recent forecasts of the increase in usage which have been made in connection with this expansion have however been described as optimistic. The problem of overproduction is unfortunately likely to be a recurring one in the Australian petrochemical industry since the optimum scale of production is so large in relation to the existing markets.

With this situation it is extremely difficult to say precisely what type of petrochemical industry could possibly be located in Queensland after 1966. In the case of synthetic rubber, imports in 1960 were 25,000 tons and the Altona plant, with capacity for 36,000 tons, should be able to meet requirements for some time to come. For polyethylene, consumption in 1960 was around 9,500 tons and forecasts of 26,000 tons by 1965 have been made, but capacity is being increased to meet this. The consumption of P.V.C. is at around 11,000 tons and is expected to double by 1965. As in the case of polyethylene there is at present excess capacity in the face of foreign competition. The position is much the same for polystyrene except that the rate of growth in consumption is expected to be slower. These three products now occupy over 90 per cent. of the plastic materials market in Australia whilst the markets for cellulose acetate and formaldehyde are declining. By 1966 the positions of the leading three plastic materials may in turn be challenged by new arrivals. As far as carbon black is concerned the bulk of the raw materials are imported despite the potential availability of materials from present refineries, and sulphuric acid is for the most part a by-product which is already being produced in ample quantities from other sources. One development which will affect Queensland adversely is the use of ethylene as a source of ethyl alcohol in place of molasses. This has happened in other parts of the world but there are no known plans as yet for this to happen in Australia. But with the new petrochemical refineries in Australia, it seems likely that in five or six years' time, molasses will be out as an industrial alcohol source.

One possible activity associated with refining but outside the petrochemical field is the production of lubricating oils. The capital required is however high and three plants are at present under construction in Australia. These are at Kurnell (£11.13 million), Kwinana (£8-10 million) and Geelong (£6 million).

The establishment of a new oil refinery in Brisbane affords no guarantee therefore that a petrochemical industry

will also be developed there. Compared with an industry such as iron and steel, for example, the primary and secondary effects of a refinery are less marked. To start with, the numbers employed are small (except during the construction period), and even if some feedstocks for the petrochemical industry were produced they might be shipped elsewhere for further treatment. The investment required is large and the numbers of commercial organisations likely to be interested in intermediate processes is correspondingly limited. This is not necessarily true of the industries which make use of plastic materials and some of the more specialised chemicals but their locations are not usually determined by the location of the refinery itself. Although the size of the refinery will be not much less than that of others in Australia, which are at present producing feedstock for petrochemicals, scale is important in the face of foreign competition. It is also important where the refinery is regarded as the principal means of developing chemical activities and a chemical complex of sorts is not already in existence.

Miscellaneous chemicals.—This section is devoted to the consideration of possible chemical activities based upon the availability of raw materials.

The first of these is ilmenite, which is the principal source of titanium oxide for the manufacture of pigments. Unfortunately Queensland ilmenite has a high chromium content and developments in the use of this material have taken place elsewhere. Even in the case of Western Australia, which is the principal Australian supplier of ilmenite, a large proportion of the material is at present exported and the rest is sent to the Australian Titan works in Tasmania. Output at the latter works was 12,000 tons in 1959-60 and the proposed output for 1964-65 is 22,000 tons. In addition, Laporte Chemicals are setting up a plant at Bunbury, near Perth, (Western Australia) to start production in 1963, and Australian Titan is considering the possible location of another works somewhere in Australia. Although Queensland may not be able to supply ideally suitable material it could be of interest as a source of relatively cheap power.

The cause of the 1955-58 boom in rutile prices was the heavy demand for titanium metal for United States defence requirements. The cause of the decline since then has been the United States decision to concentrate on rockets instead of manned aircraft. The situation has been radically changed, however, by Dupont's new process for making titanium oxide pigment from rutile, which has hitherto been impractical. The new process uses chlorine to make titanium tetrachloride from rutile, and then oxidises it to make titanium oxide. It is believed to produce a better white than the ilmenite method, and other companies—for example Laporte and British Titan—are looking into it.

Queensland should in any case benefit from Dupont's recent interest in supplies of 30,000 tons of Australian rutile a year—roughly one third of current Australian rutile exports, nearly all of which comes from the strip of beach sands straddling the New South Wales and Queensland border. If the Dupont process proves suitable for Australian conditions, then Queensland would have strong claims for consideration as the site of a new pigment works; if the results of Australian Titan's current investigation into it are favourable, it would certainly make Queensland's case for the new works much stronger.

Mention has already been made of the difficult future likely to be encountered by molasses as a raw material for the chemical industry. This material is however a possible source of citric acid, for which demand is increasing as an additive to soft drinks. Sugar cane wax was at one time produced in Queensland, but has now been abandoned following the fall in the price of Carnauba wax, which has better properties. Bagasse is a possible source of furfural (used as a solvent, in the preparation of weed killer and fungicides, and possibly as an alternative to phenol in the production of nylon which is to be made in Australia). Furfural can however be made from a number of other materials and with collection difficulties as regards bagasse, a plant in Queensland could only be on a small scale, if at all. Much work has been done on sucrose as a possible chemical base, but costs are still high and much work remains to be done before any firm conclusions can be reached.

Coal has already been considered in some detail as a source of power. As a source of chemicals, much depends upon its use for the production of gas and/or coke, and much therefore will depend on whether or not a steel industry is established in Queensland. The most important by-product is ammonia for which, in Western Europe, coal is the principal source, but the majority of chemicals capable of being derived from crude benzole and crude tar distillation are present in larger quantities than are currently required by the chemical industry. At present the availability of coal based chemicals in Queensland is largely dependent upon the demand for gas, and any surplus to local requirements in Brisbane is being shipped to the Sydney area. Supplies are however fairly small. Calcium carbide, which is derived from the treatment of coke, would appear to have much better prospects of being produced in Queensland. The production of coke for the process would in turn increase the availability of coal based chemicals. Carbide production is fuel intensive and is a major

manufacture of Tasmania, but some £0.5 million's worth is imported annually into Australia. Carbide is used for the production of acetylene, which in turn, besides being used for metal work, is a source of aliphatic chemicals, and is associated with such products as vinyl chloride, trichloroethylene and acrylonitrile. The principal drawback is that in future, acetylene itself may be produced more cheaply from oil than from carbide and in any case vinyl chloride made from ethylene and acrylonitrile from propylene are likely to become increasingly competitive.

Both bentonite clays and fluorspar have been extracted in Queensland in varying quantities from time to time. Bentonite is used in metal casting, as a decolorizing agent and as a filler and a plasticizer for a wide range of products. Fluorspar also has a wide range of uses. Its most important use is as a flux in furnaces for the smelting of metals, particularly iron and steel. Of increasing importance, however, is its use for the production of hydrofluoric acid and its derivatives, used amongst other things for making artificial cryolite which in turn is used in the production of aluminium. Of the two minerals fluorspar would appear to have the best prospects of attracting industry interested in some stage of its preparation and treatment. Although overall demand is good there has however been considerable competition from imports, and production of the mineral in Queensland has declined. The relative cheapness of imported supplies, in fact, reduces Queensland's advantage as the only Australian source of the mineral.

The production of salt in Central Queensland has already been referred to when discussing potash. State production in 1958 was 1,253 tons. In 1959 it had risen to 11,054 tons and present capacity may be raised to 60,000 tons per year. This compares with production in South Australia in 1959 of approximately 360 thousand tons. Salt is also supplied to an electrolytic plant in Melbourne from inside Victoria, but South Australia is the principal source for most plants. Most of the new output in Queensland would be for exports, but some consideration could be given to the production of chlorine, caustic soda, and soda ash. Current production of chlorine in Australia is in the region of 27,000 tons, of caustic soda 42,000 tons, and of soda ash sold as such 105 thousand tons. Caustic soda can be produced by the electrolytic process in roughly equal amounts or caustic soda can be produced by the lime soda process. With the rise in demand for chlorine, the electrolytic process has been most favoured in various parts of the world. In Australia electrolytic plants are operated by ICIANZ at Sydney and Melbourne, by Union Carbide at Sydney, by A.P.M. at Maryvale (Victoria), and A.P.P.M. at Burnie (Tasmania). A plant which has been recently completed is that of Australian Newsprint Mills at Boyer (Tasmania). At Osborne (South Australia) caustic soda is made from soda ash which is also produced there by the Solvay ammonia-soda process. Sodium bicarbonate is also made there from soda ash with calcium chloride as a by-product. This works is being extended and its total gross capacity for soda ash, sold as such and converted on the spot, will go up to 160,000 tons.

Alkalis are not normally exported from Australia, and imports as high as 12,725 tons of soda ash and 2,790 tons of caustic soda in 1955-56, have fallen to 1,120 tons and 363 tons respectively in 1958-59, principally special grades. However, in 1959-60 there was a significant rise in caustic soda imports from Japan, going principally into Tasmania.

As far as Australia as a whole is concerned, the problem is not so much one of shortage of raw materials, as of costs, and this factor has accounted for the rise in imports from Japan. Demand in Queensland will be principally dependent upon the development of petroleum refining, alumina production at Weipa, and the possible bagasse pulping industry. ICIANZ has protected its competitive position vis-à-vis imports by improved efficiency in production and distribution, including bulk handling, and a plant in Queensland on the scale dictated by anticipated supplies of salt could have difficulties in competing under present circumstances, particularly as the industries mentioned above would possibly be located in areas some distance away from the salt deposits.

(h) Metal manufactures

It has been shown in Part II. that although many of Queensland's metal goods industries are successful, the pattern of trade remains heavily one of majority imports from other States. Even if motor vehicles are left out of account, Queensland imports far more metal goods and engineering products than it exports.

It is true to say that it is in jobbing work and the less mass-produced engineering products that the Queensland industry is well established. This includes agricultural machinery (although imports in this category remain large), steel fabricating, pumping, boring, railway equipment, heavy electrical equipment, and some internal combustion engines. Shortage of skilled labour is a factor holding back the further development of these lines; but in any case high costs both preclude the rapid development of an export trade, and render the industry vulnerable to import competition, so that the economic and industrial development of the State as a whole is likely to provide the measure of development in all these

industries. The only thing that could change this radically would be individual inventive capacity and enterprise of the type which has been referred to earlier.

This has been the main determinant for a number of batch produced engineering products in which the Australian industry is already more or less self-sufficient. These include various products manufactured only on a small scale, if at all, in Queensland—earth-moving, excavating, and allied equipment, road-making machinery, and certain types of agricultural machinery. New public works, and any major stepping-up of the road programme would point clearly to the former two classes of machinery, whilst sales of most agricultural machinery could be given a considerable boost by any serious government attempt to achieve the subdivision and re-allocation of some of the larger rural estates. But in all these sectors, present Australian capacity is adequate or excessive, despite a certain amount of export success.

Sugar machinery of all kinds is already doing well in the State, and if a Queensland manufacturer could perfect a small cane harvester within the reach of the pockets of the larger cane farmers or groups of farmers, that could deal satisfactorily with the problem of lying cane, the prospects for its sale, both in Queensland and overseas, would be considerable.

Machine tools also come under the general heading of more individually-engineered products in which inventive capacity and enterprise are probably the most important factor. But in this case Australia has not been as successful in capturing the domestic market as in other similar lines: its production satisfies only about 35 per cent. of the Australian market, and has been operating at only about 70 per cent. of capacity. There is thus scope for expansion if the appropriate skills can be developed or imported, although for an outsider, the more logical place for the development of this industry would be in the larger industrial complexes further south.

Different considerations apply to mass-produced engineering products—principally consumer durable goods, although not all consumer durables come under this category. But in the main, volume production near main markets is the principal determinant. In the longer term Queensland may benefit from the further expansion of the southern markets; as demand in them becomes sufficient to absorb full production runs of some lines it will become less necessary to dispose of marginal production, at prices subsidised by the absorption of transport costs, in the Queensland markets. As this happens, and as the local market itself expands to the point where it can absorb minimum economic production runs, these industries will have a better chance of development in Queensland. In this context, it should not be forgotten that Brisbane can serve a considerable proportion of northern New South Wales more economically than Sydney.

In theory, too, industries such as these, where economies of scale are great and high wages less of a bar to low-cost production, should present Australia's best chances of exporting manufactured products. But the industry's comparative lack of export success during the credit squeeze, when capacity was too great and the domestic market was characterised by conditions of extremely intense competition leading to the greatest possible incentive to export, suggest that it may be many years yet before the export market can be relied upon to take a reasonable share of production.

Household durable goods, a range of which are already manufactured in Brisbane, are likely to be the first to feel some easing of the pressure of competition from the south as the markets there and in Queensland expand. This applies particularly to domestic electrical appliances and air conditioners and to products which can be tailored to suit local and individual requirements. The establishment or development of these industries should bring in their train such ancillary industries as die-casting, and will contribute to the development of ferrous forging in the State.

The assembly of motor cars will almost certainly expand again once the current difficulties of the industry are overcome, but their manufacture (as opposed to assembly) is still a long way off. The absolute minimum economic output of medium-priced cars, leaving out of account the luxury or specialist motor car, is 20,000 a year, and many makers with an output of 100,000 a year are considered on the small side for economic production. Queensland passenger car registrations are at present running at about 20,000 a year, so that it is only on the unlikely assumption that a Queensland factory could capture the entire State market and/or export a good proportion of its production that its existence would become justified. Commercial vehicle sales will develop rather faster than in the past as a result of the greater freedom now granted to road transport, but as in 1959 new registrations of trucks and lorries amounted to only 2,000 odd, it will be some time before local manufacture is justified. The most that can be hoped for at the moment is a gradual expansion of the motor body building and assembly activities already carried out in Brisbane.

The tractor industry in general tends to be even more concentrated than the motor car industry. Specialisation has even been carried as far as countries, with the United States having much of the world market for heavy tractors, the United Kingdom that for intermediate tractors and Germany

being a main source of light tractors. In each case, there are only a few very large manufacturers. The fact that Australia imports a large proportion of its tractor requirements points to the fact that as yet the country as a whole is not considered a large enough unit for economic tractor

production, although some export successes have been achieved by some southern manufacturers. In any case, Queensland, with the smallest area under crop of any State except Tasmania, does not at present afford sufficiently large market prospects for local manufacture on any scale.

Part IV.—THE ATTRACTION OF INDUSTRY AND CONCLUSIONS TO THE FULL REPORT

A. METHODS USED FOR THE ATTRACTION OF INDUSTRIES

There is a wealth of information available on the promotional activities and special inducements offered to attract investment in a wide variety of countries and particular areas. There is also information on the amount of investment which these countries and areas have received. It is however extremely difficult to assess the effectiveness of any given method or indeed of promotional activities and inducements as a whole, because their apparent success may be due to special attractions of the areas concerned. Thus, for example, many areas in Europe claim great success in attracting investment from the United States of America since the war. It seems very probable, however, that much of it would have occurred anyway, since American firms, seeking access to the large and growing markets in Western Europe, would naturally have chosen to set up plants in those areas where sites and labour were most readily available. The most that many development organisations can in fact claim is that the areas for which they were responsible were not overlooked by individual firms in process of considering possible areas for location. It should also be borne in mind that many American organisations have bought their way into markets in Western Europe (and other parts of the world) by acquiring an interest in or entering into agreements with, firms already operating in those areas. The availability of such firms which can subsequently be expanded with new capital in various areas may be as important a factor in determining the flow of investment, therefore, as the other advantages of the areas themselves.

The ways in which area organisations set about attracting investment may be considered under two main categories. First of all there is the range of activities of the various organisations which seek to interest potential investors in their respective areas, and secondly there are the various inducements offered to these investors. Each of these will now be considered in turn.

1. The activities of various area organisations

There are, first of all, a number of types of area organisations. The commonest are government organisations. Thus many central governments regard it as their duty to attract and encourage the development of industry and have departments responsible, amongst other things, for this. A number of departments may be involved in each country or the particular activity may be centralised in one sub-department. The main emphasis first of all, however, is on the attraction of investment to the country as a whole. The second stage of the problem to central governments may then be precise location of industry in each country, but the extent to which central governments are involved in this problem depends upon the nature of the government (particularly whether federal or unitary), upon the stage of each country's development, and upon the extent to which the individual governments are committed to intervention in their respective country's industry and trade. Thus, for example, certain central governments may be committed to a policy of initial industrialisation which involves the establishment of industry in designated areas, whilst others may be committed to encouraging industrial development (whether from overseas or indigenous) in areas of relatively high unemployment.

The activities of the central governments may in turn be augmented by those of regional governments, sub-regional associations of local governments, and eventually each of the smaller local authorities. These may have full-time or part-time officials or simply work through committees whose activities are discontinuous. Some may be organised in a pyramid structure from local to central government; some may operate independently or through associations which do not reflect the structure of government.

In addition to the government organisations are associations which may or may not receive government backing at some level. Some of the associations may be representative of government, industrial, and other organisations. Thus, for example, in the United Kingdom there are associations which operate for areas which include several counties or parts of counties; there are also some which appear not only to be rivals, with associations belonging to other areas, but to be

rivals with other associations for specific areas. There is no blueprint for this type of organisation. Much depends upon local initiative and the extent of the realisation that, although each small area may be in competition for industry, all of them may fail in their endeavours unless they can pool resources. Furthermore, although these associations depend on the strength of broader local feeling for their support, their chances of success in the execution of their duties can only be at a maximum if the local feeling of individual supporting areas can be channelled and controlled. There have been occasions when a small area association, acting independently, has been able to bring off a "coup". There have been, however, more occasions when a small area association, acting independently, although nominally a member of a larger association, has merely adversely affected negotiations already undertaken by the larger body and baffled the industrialist concerned, or been able to offer only a limited choice of locations when the larger area could have offered much more. Many industrialists would not be averse to being offered inducements by rival areas, but most small areas have very few inducements to offer; all they can offer, in most cases, is argument, and not every one wants to be the centre of fight. The important point is that one object of the larger area organisations should be to create a favourable image of their area as a whole and, at the same time, to be able to offer variety. This image can very easily be destroyed and one way of doing it is to make local differences of opinion within the larger area only too apparent, especially when the negotiations are with someone who is not familiar with the area at all.

2. The overseas activities of area organisations

The principal way in which the various Australian State Governments operate overseas independently is through the offices of their Agents-General in London. Thus, South Australia, Western Australia, Tasmania and Queensland have only the one overseas office. There are some differences between these four offices in the emphasis put upon certain types of promotional activity, but all work on very narrow budgets (some have no special allocation of funds for promotional work) and Queensland with 23 people appears to have the largest staff. The normal method of operation is for the Agent-General, the official secretary, or the public relations officer, to forward enquiries to the relevant State Government officials at home. Because of the small budgets a more active approach is limited. There is some advertising in newspapers and trade journals and occasionally articles are written for inclusion. The greatest reliance is, however, placed upon personal approaches and talks with interested parties. The South Australian office does not appear to be particularly active. That of Western Australia relies heavily upon the two-way traffic in V.I.P.s and quotes the visit of the Minister of Industrial Development, followed by the return visit of nine industrialists to Western Australia, as an instance of this sort of thing. Contacts established by these visits have and are being followed up in London. The Tasmania office also relies on high-level contacts. Some 18 months ago a mission of Tasmania businessmen visited the United Kingdom and enquiries from the visit are still being handled. None of the above States have offices in the United States of America or the Common Market countries. The Western Australian London office is thinking of extending activities to other parts of Europe and a visit is organised. The Tasmanian and Queensland London offices send literature and information to various Continental firms.

Because New South Wales and Victoria have more funds available, their overseas activities have been more extensive. Thus New South Wales, besides the office of the Agent General in London, has a representative in the United States, and has done some promotion amongst French and German firms. Nevertheless the nature of the State's activity in the United Kingdom seems to be much the same as that of other States. Meanwhile Victoria has a special Promotion Committee, set up at the time of the Melbourne Olympic Games by the government, and consisting of eminent businessmen, journalists and other public figures. The Committee now has a budget of £60,000 p.a. which is mainly spent on promotion in the United States of America and the United Kingdom. The public relations firm of F. J. Lyons is employed in

London, where the Committee has an industrial counsellor and a sub-committee on which the Agent General sits. A monthly news letter is published in addition to articles for the press.

The activities of the Australian States may be compared with those of various area development bodies in the United Kingdom. The most active of these are the Northern Ireland Development Council and the Scottish Council (Development and Industry). The former is composed of a number of people who are accredited experts in their particular fields. They meet four or five times a year and are unpaid. In London they have a small full-time staff who work for the Northern Ireland Ministry of Commerce. There is also a number of promotion men working throughout the United Kingdom and two men in the United States of America. In 1959-60 some £40,000 were spent, of which £12,700 was on press advertising. The Scottish Council (Development and Industry) has a broad range of activities. In 1959-60 some £60,000 was spent, including £36,500 on salaries. Only a small part of its resources are spent on trying to attract industry, but visits to the United States, Switzerland, Germany and Sweden were organised in 1959-60. It had a stand at the British Exhibition in New York in June, 1960, and publishes the magazine "Scotland" at a profit of £2,000 per annum. Just as the Northern Ireland Development Council relies to a considerable extent on the efforts of individuals interested in the development of Northern Ireland, so the Scottish Council relies upon getting support in its efforts from Scotsmen in various parts of the world, and the Council's committee in New York is composed of Americans of Scottish origin. Both the Northern Ireland and Scottish bodies, in common with other development associations in the United Kingdom, keep in close touch with central government activities (particularly those of the Board of Trade) which are likely to affect the distribution of industry in the United Kingdom.

Outside the United Kingdom there is a large number of bodies which have been active in trying to attract industry or some form of investment to various countries. In Europe the Belgian Government, for example, has been anxious to get investment in areas where traditional industries are declining. One of the most successful, however, has been the Dutch Government, which has succeeded in getting a large proportion of the investment of American firms anxious to start activities within the Common Market. Their success, however, dates from before the inception of the Common Market. How much of this success was due to the special circumstances in Holland, such as the progress of industrialisation there in general and the increase in population, and how much was due to the Dutch activities in New York is difficult to assess. There can be no doubt that much of the investment would have taken place in any case, and now that the most attractive sites have been taken the process appears to have slowed down. In New York, however, the Dutch organisation for industrial development has been very active and has had the advantage of being associated with trade promotion, the Chamber of Commerce, and consular activities in general. Because it is the organ of the Dutch Central Government, its activities should more precisely be compared with those of other central governments. The Australian Commonwealth Government does, of course, act on behalf of the country as a whole and act as a link for the various State Governments overseas. The various United Kingdom area associations can also keep in touch through consular channels, and in New York now have the British Industrial Development office, which was set up by the Board of Trade some twelve months ago.

With the increased number of independent countries throughout the world, there is greatly increased competition for industrial development. Puerto Rico can be taken as another example of a country which has been successful in attracting American investment. The office of the Puerto Rican Economic Development Administration in Frankfurt has been less successful in getting European investment, but even so in three years about 70 businessmen have been induced to visit Puerto Rico and six plants have been established. The establishment of three of these plants, it should be noted, stemmed from press advertising. Mailing was found to be ineffective.

From the examination of the various activities of a wide range of development organisations, of which the above quoted are only some examples, it is possible to draw the following conclusions regarding the effectiveness of overseas activities:—

- (i.) The importance of personal contacts at a fairly high level by persons with an intimate knowledge of the economy of the country they represent is stressed.
- (ii.) In addition to making use of regular officials every effort should be made to enlist the support of business leaders with contacts abroad. Specialist public relations organisations should only be used where there can be close co-operation with State officials, and where the organisations are well informed on the state of Australia.

- (iii.) There are some advantages in having occasional all-out efforts such as two-way visits of groups of business leaders, advertising campaigns or exhibition stands. Indiscriminate direct mail campaigns are not thought to be particularly effective.
- (iv.) There is considerable competition for the limited amount of capital in the United Kingdom. Every effort should be made to interest industrialists therefore in other countries in Western Europe. This could be done by a short-term mission rather than a permanent office.
- (v.) As far as the United States is concerned, it is difficult to see how a State, with limited financial resources available, could compete successfully by having a permanent office there. The severest competition will be from the established organisations of central governments of a whole host of countries, particularly those which represent possibly compact and comparatively uniform countries. Every effort should be made to solicit the help of Queenslanders living in the United States and again the short-term mission rather than permanent office would appear to be most appropriate.
- (vi.) Although, for example, New South Wales has secured the majority of United States investment in Australia, a lot of this would have come in any case because New South Wales and Victoria are regarded outside Australia as having the natural areas in which to establish a business rather than because of the work of the United States office. Just as development associations in the United Kingdom regard in the first instance London and Birmingham as centres from which they might attract investment, so should Queensland regard New South Wales and Victoria. Much of the investment in Australia by foreign firms is in fact reinvestment, and just because certain of these firms happen to have thought only of Sydney or Melbourne as location centres when they first invested in Australia, this does not prevent them from looking elsewhere should they decide to expand.
- (vii.) Existing Queensland organisations in New South Wales and Victoria, and Queenslanders resident in these States, could be more fully utilised in providing information and establishing contacts. It is not suggested that the Queensland Government should gain a reputation for pirate operations, but simply that established industrial areas in Australia are likely to afford as good an opportunity for attracting investment as centres overseas, and that Australian as well as foreign firms should be considered. In Western Europe, one big argument in favour of development area policy is the increased congestion in and around established centres, as much as the fact that other areas need development. Many firms are also becoming aware of congestion as being a problem for them as well as for the community. A special lookout should therefore be kept in parts of New South Wales and Victoria for firms which are likely to require additional space or face increased problems of congestion.
- (viii.) Distinctions must be made between promotion activities which are simply designed to create a generally good impression of the State, those designed to maintain this impression, and those which are intended to ensure that the right people are approached at the right time. For the first two, general brochures, press advertising, articles in journals, and lectures seem to be most appropriate. For the last purpose special campaigns and individual approaches, particularly by businessmen, seem to be best suited.

3. The local activities of area organisations

The nature of the link between external and internal activities of the various area organisations concerned with development depends upon the type of organisation and the funds available. Thus for central governmental organisations, external activities may be left in the hands of the consular services, and internal activities with a range of government departments. There is, however, an increasing tendency for industrial development to become the particular responsibility of one central government department at home and for this department to undertake some of its own activities overseas. Whether or not a non-government area organisation operates overseas depends entirely upon the availability of funds. Many of these organisations have come into being simply to co-ordinate the efforts of more localised organisations and to influence public opinion and governments in their respective countries.

Whatever the nature of the area organisation or the extent of its external operations, however, its operations within the area for which it is responsible are of considerable importance. Its first responsibility is to provide exact information

either for general publications or in response to particular enquiries. Another is to follow up enquiries and, where necessary, encourage and arrange visits. Later it will be necessary to ensure that negotiations are carried out quickly and efficiently, and generally that the path is made as smooth as possible for a prospective investor. The sort of information which must be provided is likely to relate to such things as the availability of raw materials, intermediate products, labour, sites, building, services, transport costs, markets, loans, grants and concessions. Businessmen in fields related to that of the prospective investor can help here to a considerable extent. But the area organisation should not simply be concerned with enquiries from outside. Its task is to encourage industrial development as a whole and although established firms are likely to be dealing with government departments and local authorities direct, the development organisations should be well informed on the nature of their problems and try to ensure that these problems are quickly and effectively dealt with. Just as a new firm coming to the area should not be forgotten about, so every effort should be made to encourage the sound growth of established firms and the establishment of new firms by individuals in the area. This is important because established firms must be convinced that all-round growth is to their advantage and that efforts are not simply being made to bring in competition for themselves. Internal growth is in fact the crux of the problem. If established firms are not happy with the situation in the area and if they feel that every effort is not being made to meet their problems, then this is the most disadvantageous advertisement the area can have and all of its efforts outside the area will eventually be wasted. It is not here suggested that firms should be protected from normal commercial risks or that they should be pampered, but simply that they should not be allowed to feel that they are being obstructed over what, in many cases, turn out to be petty matters. If established firms speak well of an area and of their relations with area and governmental organisations, the task of encouraging other firms to come in will be that much easier. This is, of course, a matter which concerns not only the development organisation itself but all aspects of government and it cannot be stressed enough that failure to deal with a firm's legitimate petty grievances is likely to create as unfavourable a picture of an area as disagreement over major issues. Examples of this happening in various areas throughout the world are unfortunately only too common.

4. Fiscal, financial, and other inducements

This subject presents a number of problems. In the first place it can be said that certain areas have not attracted capital from outside simply because it appears that investment would be less profitable than elsewhere. It may, however, be that certain areas have never been considered, or that the belief that investment there would be less profitable is without foundation. If this is so then what is needed is publicity which will bring an area up for consideration, and facts which show that the investment in certain sectors would not in fact be less profitable. So far the question of inducements does not arise. It does eventually come up, however, where investment in other areas would be more profitable, and where other areas are competing by offering inducements. It is assumed, at this stage, that the areas under consideration do not vary with regard to general risk (for example, from political circumstances), or with regard to the extent to which earnings and/or capital can be repatriated.

Where there are good grounds for believing that investment in other areas would be more favourable for as far ahead as can be foreseen, then, as suggested in Part III., the desirability of such investment is in question. It might be that the investment under consideration would encourage further industrial growth, the success of which would outweigh the cost of special inducements for the original investor, but such cases are likely to be rare and the precise calculation of benefits difficult. The soundest argument in favour of inducements is that they help offset removal expenses or enable a firm to become established and in the long run independent of outside help, so that the period before the investment becomes profitable is shortened. Nevertheless, care must be exercised in the selection of likely firms to receive inducements and these should not be such as to antagonise existing firms in similar industries in the area.

Regarding competition with other areas, the situation becomes a little ridiculous if one finds that areas which are well able to attract industry in any event still offer inducements. This means that less fortunate areas must increase the level of their inducements and so on. What must be avoided is a level of inducements which could lead to expenditure (or loss of revenue) better put to other uses, such as improving facilities in general and employing more qualified staff on development problems. From the point of view of maintaining a favourable "image" of the area, furthermore, a high level of inducements is not always an advantage. In the first place large inducements may cause potential investors to wonder just how badly off the area is, and secondly it may not always be politic to publish details of just what inducements have been given—investors may not wish it, established interests may be offended, and rival areas may be encouraged to start another round of competition in inducements.

The feeling that special inducements to potential investors are necessary arises from the fact that the level of investment in certain areas has lagged behind that of other areas. Capital, however, is only one factor of production and, as suggested earlier, the main reason for concern about the level of investment is its effects upon the demand for labour. The less fortunate areas want to retain and attract capital and labour and make full use of the land and raw materials at their disposal. Under conditions of perfect competition and of *laissez-faire* government attitudes, those factors of production which could go elsewhere would tend to do so. In so far as they could not or did not, their prices would fall and the prices of similar factors outside the area would rise. Capital is the most mobile factor and its price is rarely determined on a narrow area basis. Land is immobile, but the products from it can be transported elsewhere, so that land values in general might not fall too far and most of the onus of the necessary adjustment would fall on labour. If wage rates were allowed to fall, certain types of industry might be attracted to the area until such time as the difference in wage rate between one area and another reflected differences in transport costs from sources of materials and to main markets. In actual fact the price of labour is one of the most inflexible of all prices, and, with systems of national wage rates becoming more common, the adjustment between areas is most often achieved by means of differences in levels of unemployment, differences in the incidence of overtime working and special bonuses, and eventually the movement of labour. It is not suggested that a *laissez-faire* policy should be followed, because of the importance of non-economic consideration and the dangers, in certain cases, of a downward spiral of wages and spending being intensified, but the magnitude of the task which special inducements are often expected to achieve should be appreciated. Obviously, although the room for government action is limited, some effort must be made to ensure that as sometimes happens because of the local strength of organised labour, labour costs are not in fact higher than in more fortunate areas. Between 1945 and 1960 the Northern Ireland Government spent £42 million stg. on building factories and extensions, and on grants to industry. Loans were made, and fuel and power costs subsidised to the extent of £0.75 million stg. per annum, and industrial buildings were given an exemption of 75 per cent. from rates. During this period 40,000 jobs were created amongst assisted firms. The cost therefore came to over £1,000 stg. per job and the level of unemployment is still well above average for the United Kingdom. By comparison with certain areas in Australia, Northern Ireland is fairly close to large markets, and additional transport costs over manufacturers, in say, the London area are unlikely to come to more than one or two per cent. of total costs.

Each of the various types of inducement will now be examined in turn, but it is well to bear in mind that in general, offering inducements can be a highly competitive and expensive business and that such liabilities extending over a considerable period should not lightly be incurred.

(a) *Tax concessions.*—The room for manoeuvre here by Australian States is limited, and any tax concessions of a really important nature would have to be offered by the Commonwealth Government. Suggestions have been made from time to time that, for example, businesses in the tropical parts of Australia should have tax concessions. Before much could be achieved, however, the Commonwealth Government would have to formulate some kind of development area policy for the whole country and in a Federal system this is particularly difficult to achieve. Meanwhile the tax concessions which could be made in individual States rest largely in the hands of local rating authorities.

In other parts of the world some very lavish tax concessions have been offered. In the Republic of Ireland for example new export businesses are exempt from taxation for ten years—in the Shannon Free Airport area the exemption is for 25 years. In such areas as the Hainaut Province of Belgium and Southern Italy even more lavish tax reliefs have been offered, and some concern must be expressed about the length of time before various enterprises are expected to become established.

(b) *Provision and guarantee of loans.*—All of the Australian State Governments either make loans or guarantee those made by other institutions to industrial concerns under certain circumstances. In New South Wales and Victoria, however, these facilities are only available to firms settling in particular areas. By this means selected firms can either get funds which they might have found difficulty in getting elsewhere, and/or get them at favourable rates. This can be of advantage to small firms in particular, since they very often have difficulty in getting funds in any case. As far as larger firms are concerned the advantages may be difficult to assess. Where the proposed project appears to be just possible then the granting of a loan or of a guarantee on favourable terms may just tip the scales in the right direction. Where however the project is more speculative, any interest rate advantage would have to be considerable, since the possible margin of error in the calculation of other more important cost items is likely to be considerable.

These facilities therefore are likely to be most effective in the case of small concerns, particularly those already in

the area and anxious to expand. For larger concerns they should be held in reserve until a precise evaluation has been made of the other costs involved and some calculation can be made of the cost differentials which the margin in interest rate must cover. The provision of loans or guarantees should be regarded as an alternative to the provision of sites or buildings for rent. The Directorate of Industrial Development, Tasmania, reports that there has been a growing preference for loans to cover the erection of buildings rather than for standard factories to be rented.

(c) *Grants*.—Cash grants designed to offset some of the cost of establishing a new factory are not as common in Australia as might be expected. Tasmania and South Australia both give them, but not, apparently, on a large scale; Victoria also assists firms in country areas with the transport costs of plant and machinery from Melbourne. An overseas firm setting up a factory in Queensland would have to meet many additional items of non-recurring expenditure which it would not have to meet if it expanded at home. These costs are likely to be disproportionately high for small ventures in light industry. The level of expenditure incurred by governments giving such assistance is, however, very often high in relation to the number of new jobs created in the first instance, and a close examination must be made of likely secondary effects before any expenditure is incurred. The Northern Ireland experience is worth bearing in mind in this connection.

(d) *Subsidies*.—In various States of Australia freight concessions can be given to firms located in country districts in order to offset disadvantages which they may have in relation to firms in the metropolitan area. New South Wales has a decentralisation fund from which assistance is given towards freight costs and power, and gas charges, where such are considered to be high in relation to those in the metropolitan area. The argument behind this type of subsidy is that, to start with, a firm in a new area will have to send most of its products elsewhere, and until such time as various facilities are fully utilised their marginal cost will be high. It is only valid, however, where steps are taken to create a centre of industry, so that local markets become more important, and facilities are, in fact, more fully utilised. The granting of a subsidy must, therefore, be part of a concerted plan and not simply a means of assisting a particular enterprise which might not be followed by others. It follows from this, that if a centre is to become industrially viable, then it must be concentrated, and industrial enterprises which are too widely dispersed may never get to a stage where they can dispense with subsidies.

(e) *Sites and/or buildings for rental*.—This inducement is an alternative to the provision of State loans or grants. There are considerable variations in the way in which it is operated. Thus sites and/or buildings may be permanently rented with or without an option to purchase after a period of time. Alternatively there may be a form of hire-purchase agreement. The actual terms arranged may be very favourable and in fact involve an element of subsidy. As already mentioned, there is a growing preference for specialised rather than standard factories, and the construction of factories in anticipation of some firm being attracted is becoming more risky. This practice was, in any case, only effective when there was a general shortage of buildings. Nevertheless, the provision of sites for rent and, after negotiations have been completed, the construction of a factory for rental can be a considerable advantage to a firm which wants to utilise such capital as it has of its own to the full on the purchase of machinery and day-to-day operations. The particular firm concerned may then become less dependent upon ordinary financial institutions for the provision of its working capital. It should be noted that there has been a general tendency for certain types of firm to rely upon medium and long term finance (for example, from insurance companies) rather than upon short-term advances from banks.

Industrial estates can be run either by the government or by private enterprise. Their purpose in the past has been either to provide a profitable investment for the companies setting them up and running them, to help depressed areas where the traditional heavy industry was declining (in this case the enterprise is the government's, and rents are subsidised), or to provide facilities for industry which are not readily available (such as in the immediate post-war period in both Australia and elsewhere when buildings were scarce and building licences hard to get). The success of the Rocklea estate was founded under the last set of circumstances. The importance of trading estates as a feature of development policy can however be exaggerated. They can do little to attract industry to an area which is not already industrialised. They have rarely become the main source of employment or the main centre of industrial activity in the area in which they are established.

The real advantages of industrial estates lie in the fact that facilities can be provided—either by the government or by the company setting up and running the estate—on an economic scale for small industries which would otherwise have to pay more for such services. Thus, where there are a number of small consignments moving between individual firms and other centres, the sum total may be sufficient to

justify the installation of new transport facilities. Services provided for the tenants which save them trouble or money are also important—such as communal catering facilities, and the provision of power, whether in the form of ordinary or processed steam or otherwise. Under the present circumstances of the Brisbane area, the provision of sewerage is also of considerable importance. But these economies of scale are usually only decisive with small establishments. Although industrial estates can offer advantages to firms already established and thinking of expanding, they can do little in themselves to attract overseas investment. Once investment from overseas has been decided upon, largely for other reasons, they can be of use in determining precise location, in which case there is likely to be little difference between industrial estates as such and the normal zoning of industry.

B. CONCLUSIONS AND RECOMMENDATIONS TO THE FULL REPORT

1. The importance of primary industry

The close relationship between primary and secondary industry in a State such as Queensland must be emphasised. There can be no doubt that Queensland will continue to be to a considerable extent dependent upon primary production with pockets—even though possibly quite large ones—of secondary industry whose size and prosperity will depend to a large degree on that of primary production. The present factor limiting the further development of secondary industry is the size of population and markets. This qualification applies to Australia as well as to Queensland as long as costs in many Australian industries continue to be at levels which make competition in export markets difficult.

Mining in Australia however offers excellent growth prospects both at home and overseas, and there are reasonable grounds for anticipating that the processing and treatment of mineral products in Queensland will become of increased significance. Funds devoted to exploration for and exploitation of mineral resources would certainly contribute, to a marked degree, to the all-round development of the State. The further development of the *pastoral and agricultural* side of the economy should also be fostered. The present concentration on increasing activity in the beef trade, particularly on an all-year-round basis, is certainly correct, but there should also be some effort made towards the further establishment of farm research and advisory stations throughout the State. Much has and is being done by the CSIRO and the State—the sugar industry is particularly well served—but closer study should be made of the reasons for failure or decline in certain areas and of ways of combating such things as falling yields on the Atherton Tableland and soil erosion throughout the State. Obviously there are problems peculiar to farming in the tropics, but considerable benefits could be got from providing farmers with more technical assistance and from providing possible new entrants with more precise information on conditions and methods. Much more could also be done towards intensifying the use of land in the State by subdivision of the larger rural properties and the attraction of immigrants prepared to undertake, for a time at least, a larger measure of subsistence farming. The disposal of any additional output of most of the State's agricultural products is likely to be, for the time being, difficult. Eventually many markets are likely to expand and technical improvements in farming in the State and improvements in transport facilities should increase the competitiveness of Queensland's agriculture.

2. The need for Commonwealth assistance

A precondition of development in a State the size of Queensland is considerable spending on infrastructure. Early State Governments recognised this, and the result was a railway system more comprehensive than that of any other State; but for a large part of the present century Government reluctance to borrow on the scale necessary to continue the excellent start made has meant that the infrastructure of the State has remained far below what is necessary for the efficient exploitation of all the State's resources. This attitude has been changing rapidly in recent years, but borrowing on a much larger scale for road construction, rail modernisation, sewerage, and the construction of such major projects as the combined irrigation and power scheme on the Burdekin River is essential, if the over-all development of the State is to proceed in such a way as to attract the population and create the wealth upon which the development of secondary industry in the State principally depends. The availability of Commonwealth funds would naturally be the first possibility to explore. The case for increased Commonwealth Government grants and loans to Queensland is very strong, in terms of national policy. There may also well be a case for some kind of relief for Queensland (and presumably the other less-developed States) from the effects of the economic regulators on consumption that the Commonwealth Government has imposed from time to time. The overall need for these arises primarily from conditions of over-strain in the large industrial centres, rather than in the outlying parts of the federation, although national wage negotiations tend to obscure this fact. In addition the effects of these re-adjustments bear harder on the less developed States than they do

on the areas for which they were intended. Furthermore, Commonwealth Government action which is designed to benefit specific sectors of industry, as a result of agitation on the part of established industry, is most likely to assist those areas which are already industrially advanced. A possible rejoinder to this line of reasoning is that the Commonwealth Government's measures to assist farming and mining benefit the less developed States. All of the Australian States however are very much involved in the well-being of primary production.

3. Transport facilities

Whilst it is natural that the State railway's tariff should favour the movement of primary produce, the State's policy in raising the tariff on manufactured goods to a level higher than that of other States in order to bring the railway's overall accounts nearer to some sort of balance should probably be reconsidered. This may happen in any case as a result of road competition, now that greater freedom is permitted to the latter form of transport, but as things stand the fact that rail costs for the transport of manufactured goods are higher than in other States is a disincentive to secondary industry. Investment in the railways, and the development of more profitable suburban passenger services could well help to increase the overall profitability of the railways, but, in an extensive State such as Queensland, a subsidy to the railways should probably be regarded as part of the cost of development. Regarding railway tariffs, the precise effects of the system of tapering freight rates should be reconsidered. In many cases the system must have detrimental effects on the establishment of new centres of secondary industry. Another—and serious—disadvantage is the high cost of shipping, intrastate, between States, and overseas. Coastal shipping should in theory be of considerable importance to a State such as Queensland, with the bulk of its population being distributed along the coast. There may well be a case for a subsidised State shipping line, to provide encouragement for secondary industries along the coast. As the trade develops the line may eventually become profitable. It is obvious that if international shipping rates—particularly to South-east and South Asia—were brought down to a level more consistent with Australia's geographical advantage over Europe and America in serving those areas, the effect on Australia's export trade in manufactured and other goods would be considerable. Here again, the increased traffic resulting from such a reduction might well stimulate trade to such an extent that profitability would be increased. The overall advantages of such freight reductions to Australia and to Queensland would be so great that considerable efforts at government level to influence the shipping conference would be justified.

4. The need for concentration in certain areas

As has been pointed out in Part III. of this report, industrial development must, in order to have the desired effects, be concentrated. Only in this way can ancillary and interdependent industries be encouraged to take root, and the skilled labour force, essential to man such industries and encourage the establishment of others, be created. Contrary to popular opinion, areas within a reasonable distance of the main industrial centres will benefit from the snowballing effect of such development even though they in fact take up satellite positions and in the initial stages lose some labour. Concentration of resources is important also from the point of view of the provision and utilisation of facilities such as transport, water and power. If the costs of these are to be at a minimum, then they must be provided on a reasonable scale and fully utilised. Furthermore, the impact of what must needs be limited investment can only be great if the area concerned is, to start with, restricted. Inter-city jealousies in Queensland have resulted in the past in some degree of dispersion of resources, but the need for concentration of industrial development is of such importance to Queensland that it is now in many cases too late to take full cognisance of the natural advantages which some of the smaller towns may have over their larger neighbours. If development were to be planned from scratch again, it is perhaps doubtful if the towns that have in fact become the largest would have been selected for such development; neither Townsville nor Rockhampton have the same natural advantages as others in their vicinity, for instance in the matter of harbours. But as things stand, with both of these being the largest centres of population and industry in their respective divisions, as well as being the central railhead for extensive lines into the interior, there is no doubt that the start they have over their neighbours should be taken advantage of to the full, both to their own benefit and to that of the towns near them. It is suggested that the Queensland Government should make it quite clear as a matter of policy that efforts to expand industry in these two towns will be intensified, if necessary at the expense of the other towns near them. The advantages of this can be clearly seen in the development of the south-east part of the State. The development of Brisbane into one of the important industrial centres of Australia has not prevented, but helped, the development of other south-eastern towns such as Toowoomba and Ipswich. The south-east is now in fact

sufficiently developed to maintain some industrial impetus over a wide area. Quite obviously more industrial development is needed in the south-east but there is less need for effort to be concentrated.

5. Regional development

It is now possible to give an indication of the broad lines of possible industrial development in the various centres along the coast. As the problem of development is most pronounced in the north and centre of the State, these parts are dealt with first. It must be understood that the industries selected are those which would seem to have the best chances of survival, based upon the various non-market criteria enumerated in Part III. of the report; they leave out of account for the time being the present capacity of the various sectors of industry in Australia, and competition from imports. There is no doubt that under present conditions many of them would have a hard job facing up to competition both from other parts of Australia and from other parts of the world, given the present degree of freedom of international trade. A further detailed study of the specific schemes proposed would be necessary in order to present intending investors with the fullest information possible. If under present market conditions such schemes do not appear feasible, they may eventually become so as demand expands.

(a) As far as Cairns is concerned, it should be borne in mind that the development of industry is not always compatible with the development of the tourist industry. Cairns has undeniable advantages as a tourist centre, being close to the Great Barrier Reef, and having some of the most beautiful scenery in North Queensland within easy reach. Its future prospects would appear to follow the lines already established and be primarily linked with its rich hinterland and tourism rather than to new industries. Sugar, meat, fertilisers to serve the sugar cane fields and the Atherton and Mareeba Tablelands, and timber should continue to provide steady and satisfactory growth to the town as its hinterland develops.

(b) Townsville's future development has been clearly mapped out by the industries which have more recently been started there, and non-ferrous metals will continue to provide the basis of the town's development: a zinc refinery, aluminium fabricating (foil, cables, structurals), copper wire and brass. As the population of the north expands, the advantages of manufacturing many other items near the growing northern market will bring other industries naturally to Townsville, as indeed is already happening with the advent of such things as paint manufacturing, some engineering, packaging, industrial gases, and fencing.

(c) Mackay would be the natural choice for a bagasse pulp industry. It has larger supplies of bagasse than Bundaberg, and is closer to main markets than Cairns, whose mills, in any case, are not so concentrated. Initially the Mackay mill would supply pulp to the paper mills in the south, but could eventually supply a full scale paper industry in the south-east of the State with bagasse pulp for mixing with eucalypt pulps grown there and softwood pulp from the plantations or from overseas. A fertiliser industry would also develop naturally there. But here again, Mackay is the jumping-off place for air passengers to the tourist islands of the Whitsunday group. It may well be that as direct air services to these islands from centres in the south develop, both Mackay and Proserpine will lose out to some extent on this score; but any great development of industry will certainly spoil the attractions of the place as a centre for the exploration of the islands. The tourist possibilities of Queensland are so considerable that it is worthwhile seriously considering leaving certain areas—probably Cairns and Mackay—out of industrial development plans to retain their attractions to tourists.

(d) The best chance for the development of the undoubtedly industrial potential of Central Queensland lies in the interdependence of Rockhampton and Gladstone. The natural advantages of the two towns are largely complementary and if they are regarded as a whole, they could form the nucleus of an industrial complex and benefit from the development of primary production in their rich hinterlands. It is also essential that the development of Central Queensland be considered as an integrated industrial operation. What is required is key industries to start off the process and enable other industrial activities, which by themselves are unlikely to be undertaken, to become economically feasible. The main advantage of the area is its supplies of relatively cheap fuel. With this an iron and steel works could be developed and a large electric power station could encourage the development of an aluminium smelting and a chemical industry.

As far as Queensland is concerned, an iron and steel works could be located at either Bowen, the railhead for Collinsville—or Gladstone, the port for Moura and Kiangra. Gladstone would appear to be preferable, because it is closer to Rockhampton than Bowen is to Townsville, and because it is closer to Brisbane than Bowen. Such an industry at Gladstone could possibly lead to the utilisation of pyrites from Mount Morgan. The sulphuric acid thus produced (with the extraction of minerals in the pyrites) could form

a basis for a large scale fertiliser plant in or near Rockhampton. Supplies of sulphuric acid could be augmented by sulphur dioxide recovered from the iron and steel plant (and, if one should be established, from an oil refinery). In addition brimstone and/or phosphate rock could be imported as cheaply as at any other centre and potash, if its economic extraction from the Central Queensland salt works proved impossible. Ammonia for fertiliser production could come from a coke works associated with the iron and steel production.

Regarding the supply of cheap electric power one is brought face to face with the main problem in any developing country. Should supplies merely anticipate the rise in future demand calculated on past rates of growth, or should a major breakthrough, which seeks to stimulate demand by producing power cheaply from a large plant be attempted? Whilst appreciating the reasons behind the recent decision regarding the size of a power station for Central Queensland, it is likely that sooner or later some breakthrough must be attempted. One industry requiring cheap power is aluminium smelting. In this respect it would seem that Central Queensland's best hope for participating in the Australian aluminium smelting industry lies with Alcan's new process for producing aluminium from bauxite without going through the intermediate alumina stage. A pilot plant is at present in operation in Canada. If this proves successful, the advantages over the present methods of aluminium production lie in the fact that, although still highly power-intensive, comparatively small plants are possible. Thus if cheap power were available, a smelter in or near Rockhampton would become very much less of a risk, in that it would be much more tailored to suit Queensland's requirements, and would not have to rely to such an extent upon the highly competitive and speculative export market, both abroad, and to other States. A close watch should be kept on this development. In this connection, it is of particular interest that Alcan has not yet announced plans for producing aluminium in Australasia.

Another industry requiring cheap power is chemicals. Carbide is one product which could be made and, from this, acetylene. Coal with a low ash content (below 10 per cent.) is also required; this is available locally. Supplies of acetylene, ethylene and propylene may eventually be derived from an oil refinery should it be established. Much however will depend upon the scale of the oil refinery and on technological changes in the meantime. In addition to the above, the chemical complex could be extended to include the production of chlorine, caustic soda, soda ash and hydrochloric acid from salt.

Further development of an industrial complex would depend on the extent to which the above activities were successful, and on the development of the market. Secondary products which might be suggested are special steels, using locally produced alloying materials in particular, galvanised steel and related products, fluorides, aerosol gas and plastic materials. Fluorspar could in any case be used in the iron and steel industry as a flux. These are only some of the possibilities which open up, given the three basic developments of cheap power, iron and steel, and first stage chemicals. Under present circumstances, however, as has been pointed out in the relevant sections of Part III, the risks of embarking upon the large capital outlay involved in these major developments cannot be ignored. Meanwhile the cost of a full-scale economic and technical investigation of a scheme such as this would be amply justified.

(c) Brisbane and the south-east already has a fair cross-section of Australian industry, and its organic development will benefit from the general creation of a good climate for investment in Queensland as a whole. The development of industry in the area depends principally upon two factors: individual inventive capacity and initiative; and the growth of the Queensland, Northern New South Wales and Australian markets. As Queensland grows, there should be scope for rather greater than average growth in the production of such things as paper for packaging, bricks, cement, concrete blocks, structural steel, building fittings, tiles of various kinds, sewerage pipes, fibre glass, the lighter chemicals, drugs, and cosmetics. As the whole country develops, processed and packaged "convenience" foods should provide a good growth line, particularly frozen and freeze-dried meat, fish, poultry, vegetables, and fruit, if stimulated by a vigorous marketing drive both in Queensland and in the southern centres. In most of these lines, there is no doubt that competition will be intense, but as the Queensland market itself would appear to be far from saturated for these newer products, the local market should be capable of providing some basis for increased production. The production of food processing machinery and equipment should also show some development.

Market conditions make rather more distant the establishment of full-scale expansion of paper, building board, and petrochemicals industries. Aluminium and other non-ferrous fabricating will depend to a large extent upon developments in other parts of Queensland; aluminium foil and structural would appear to have excellent growth prospects in the State, but already considerable over-capacity is being built into the Australian economy, and much will

depend upon smelting developments in the State. The manufacture—as opposed to assembly—of many consumer durable goods must also be put in the category of industries which may be some way off establishment or further development in Queensland. The same applies to some batch-produced machinery such as road-making machinery, although this is a field in which inventive capacity can have a decisive effect. Inventive capacity is also important in the case of machine tool manufacture, a field in which Australia has yet to match the older industrialised countries. There are many such lines which could be developed in Queensland if the necessary skills could be imported or developed.

6. Protectionist attitudes

The fundamental approach to many features of economic activity in Queensland would appear to involve a safety-first, protectionist attitude. Government intervention in the past, designed to hold fast to what has been achieved without looking forward to what could be achieved, has been responsible for economic stagnation to a considerable degree. Strong Government action to overcome the inertia of the Queensland economy is essential, but this should be aimed at creating the right climate for expansion, and starting off the process in individual cases.

There appear to be sectors of Queensland industry where monopolistic attitudes tend to restrict growth by stifling competition. It may well be also that some of the marketing boards could adopt a more flexible approach to new or proposed ventures. There is no doubt that these marketing boards carry out a vital function, but anything that can be done to help rather than hinder initiative in the food-processing industry, whose further rapid development depends largely upon new techniques and products, must be encouraged.

7. The attraction of industry

It must be admitted that Queensland has not projected such a go-ahead and favourable public image as a home for secondary industry as other States in Australia. Much has been done in recent years to overcome this, but much still remains to be done. Earlier in this part of the report some of the best means to achieve the dissemination of the idea that Queensland is prepared to make the way of the intending investor both smooth and profitable have been suggested. The Secondary Industries Division, apart from helping in negotiations with prospective investors in all parts of the State should be in a position to provide information and informed opinion on each possible industry in relation to Queensland, Australia, and the rest of the world. It should be in a position to supply regular and accurate information both to the press and to Queensland representatives elsewhere, whether official or private. It must also be able to answer immediately any queries or put up closely-argued propositions and supply cost analysis of proposed schemes in response to any interest unearthed by representatives. This function would be particularly important in the case of inter-related schemes such as that for Rockhampton-Gladstone, where each component industry needs the establishment of other industries before they will be attracted. In order to provide this kind of service, the Secondary Industries Division should be expanded to take in more research staff, possibly with industrial experience.

We have seen that on purely economic grounds, inducements are only necessary where investment would be less profitable than elsewhere in the short term. In order to avoid subjecting existing industries to unfair competition from new ones, they should largely be limited to completely new industries or where it is deemed necessary to break up a monopoly. In the case of large firms inducements should only be used where secondary effects are likely to be great, and the inducements become unnecessary after a specified time. For the large firm by far the most effective encouragement is the provision of services such as power, transport, and water at cheap rates. In the case of power and water, the economies arising from the construction of facilities on the scale necessary to supply large industrial users may well be sufficient to provide these services on an economic basis for all users in the area. As regards transport, the increased traffic resulting from the operations of a large industrial producer would certainly bring down freight costs. This however is one of the comparatively rare occasions when a direct subsidy in the form of reduced charges would be advisable. In the case of shipping, as the multiplier effect of the large industry got under way and the overall volume of sea traffic increased, the subsidy might well become unnecessary; in the case of rail it might have to become a permanent feature. It would certainly not be advisable to attempt to make up for the loss resulting from granting special rates to large users by putting up rates for other users of the facility. Exemptions or concessions on such things as rates and harbour dues are also possible. These would be in the hands of the local authority concerned; but in any case it is probably wise to avoid publishing these concessions which should be very sparingly applied because of the difficulty in gauging their precise cost.

As far as the smaller industries are concerned, the provision and guarantee of loans by the government is a necessary supplement to the activities of normal financial institutions. Grants towards exceptional transfer and establishment

costs are also useful in the case of businesses likely to be profitable but who might otherwise be deterred by such costs. In any case, small industries should not have to bear the cost of installing communications and utilities themselves, and here the industrial estate can be of use, particularly as it enables such firms to share the cost of other services. Under present circumstances in the Brisbane area, such estates can contribute considerably to the attractions of the area for small firms but cannot do much to attract the larger ones. As an alternative to providing grants towards establishment costs, industrial sites for rental or hire-purchase should be provided for those industries which wish to conserve their own capital for running the business.

In publishing the attractions of an area the old adage that nothing succeeds like success is certainly true and industrialists only really become interested in an area which has a good record in attracting firms and in handling their problems once they have arrived. Once a firm is attracted, promises made to it must be respected since the success of the firms going to the area will be the best advertisement. It must not be overlooked that the reputation of firms already established in the area is of considerable importance and every effort must be made to gain their full co-operation in the problems of development.

8. The Future for Secondary Industry in Queensland

The need for more secondary industry in Queensland arises from the need to increase (or even retain) population. There can be no doubt that the long term prospects for primary production are good, and that even on this alone the State could maintain a much larger population, but under present conditions in socially advanced communities such as Australia, and against a record of comparative instability of farm incomes, secondary industry has greater attractions both for immigrants and native Australians. As already suggested however the development of primary production, particularly of minerals and beef, is of vital

importance in the overall development of the State and transport and other facilities should be designed to support both primary and secondary industry.

The difficulty facing Queensland is that manufacturing capacity has already, in large sections of industry, been established elsewhere in Australia and since tariff protection against goods from other parts of Australia is not possible, Government intervention in other ways must be considerable. All of the forms of Government intervention are costly. The big need of Queensland is for capital on a scale which is beyond the capacity of the State Government. It is however much better that the Government intervention should be in the form of investment in facilities and the supply of loans rather than in the form of subsidies for particular industries. On the results of the analysis made earlier, the most promising sectors of secondary industry for expansion or establishment in the State are as follows:—

BROAD CATEGORIES OF INDUSTRY SUITABLE FOR DEVELOPMENT IN QUEENSLAND*

Food, drink and tobacco
Paper and board
Building materials
Iron and steel
Non-ferrous metals
Chemicals and allied fields

* In Part III. the most likely sectors these categories are considered.

In addition to being the most likely, these are the industries on which the State Government should concentrate its efforts for expansion or attraction. Even if natural gas or petroleum is found in commercial quantities the above analysis remains true. The effect in fact would be to increase considerably the prospects for all the industries mentioned above, particularly for chemicals and iron and steel.

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